

BULLETIN OF MISCELLANEOUS INFORMATION No. 2 1932 ROYAL BOTANIC GARDENS, KEW

VII.—THE KOENIG COLLECTION IN THE LUND HERBARIUM.

A. G. Retzius in his *Observationes Botanicae*, published at Leipzig in 6 parts between 1779 and 1791, quotes a number of specimens which he had received from Dr. F. G. Koenig. Koenig was attached to the Danish Medical Mission at Tranquebar in South India from 1768 to 1774 and was subsequently employed by the East India Company in Madras, where he was associated with his friend Dr. W. Roxburgh; he died in India on the 26th June, 1785.

By the courtesy of the late Dr. Th. C. E. Fries, 346 of the specimens attributed to Koenig were picked out of the general herbarium at Lund and sent on loan to Kew. They have proved invaluable in the preparation of the concluding parts of the Flora of the Presidency of Madras.

These sheets do not bear precise evidence that they are those quoted by Retzius, but a comparison with the descriptions, the inscription of Koenig's name, and occasional indication of locality, leave no room for doubt that most of them are the actual specimens received by Retzius from Koenig and that they served for the corresponding descriptions in his work. It follows that several are the type specimens of the species concerned.

It would appear that the existence, or at least the location, of these specimens was unknown to many authors, for some of the names are entirely omitted from such works as the Flora of British India and C. B. Clarke's ms. monograph of the *Cyperaceae*. In some cases the examination of the specimens indicates that the conception arrived at from the descriptions was erroneous—e.g. that of *Cyperus flavidus*. In view of these facts, it has been deemed advisable to publish the appended list of the specimens in the collection. The list gives the correct botanical names according to modern practice as well as the inscriptions actually on the sheets. It will be found that several nomenclatural changes are involved and some well-known specific names lapse into synonymy.

The sheets on which the specimens are mounted are mostly uniform. The paper is whitish, rough, $12\frac{1}{4}$ by $8\frac{1}{4}$ inches. A few sheets are smaller and appear to belong to Acharius' herbarium, and one or two are on a bluish paper. These points are indicated in the list. The inscriptions are in ink (a few that are pencilled are obviously of later date and are usually ignored) and appear usually on the

back of the mounting paper itself ; occasionally the writing is at the foot on the front and in a few cases it is on a gummed-on label.

Usually no locality is given and it must be presumed that the information quoted by Retzius was supplied separately by Koenig. This refers also in a few instances to items of the descriptions which could not have been ascertained from the specimens. I have not been able to procure evidence of this presumption, but it is supported by one letter from Koenig to Retzius concerning Koenig's own descriptions of Monocotyledons, of which the specimens are not included in the collection under review.

When a sheet represents one of Retzius' own species, the specific name is given on the back followed, usually, by the letter " N " evidently standing for " Nobis " ; thus *Cyperus exaltatus* N. In such cases the derivation from Koenig is acknowledged by the inscription of his name, in full or shortened and variously spelled, i.e. " Koenig," " König," " Koen," or " Kön." The writing is not always the same, nor is it always of the same date, corrected identification or notes being put in subsequently, e.g. a reference to the Transactions of the Linnean Society of 1802. A few of the sheets cannot be connected with Koenig in any way, and may or may not have been obtained from him.

Sometimes a more or less full description, which tallies with that given in the *Observationes*, is inscribed and occasionally a few words on the habitat, e.g. " ad pedes montium raro."

On one or two sheets there are names which do not appear to have been published, e.g. *Tamarix coromandeliana*.

Thirty-three of the specimens referred to by Retzius as received from Koenig have not been traced : these are shown in the second list.

The determinations of most of the specimens of the *Gramineae* were made by Mr. C. E. Hubbard and these are indicated in the list as well as a few *Rutaceae* identified by Dr. T. Tanaka ; the Cryptogams were determined by Mr. F. Ballard, who consulted Dr. C. Christensen and Mr. R. C. Ching. All the remainder were determined by myself, some of the *Cyperaceae* being further scrutinised by Dr. G. Kükenthal.

In the list the type specimens are shown in thicker type. In the notes appended to the individual species I have indicated specimens which I consider are duplicates of those sent to Linnaeus, father and son, to Vahl, and to Rottboell, and on which these authors founded some of their new species.

As all the plants concerned occur in India or Ceylon, when the name adopted differs from that given in the Flora of British India, the latter has been added in brackets to facilitate reference.

In a few instances the change of name involved by this investigation has already been discussed in the *Kew Bulletin* in connection with the Flora of the Presidency of Madras ; in those cases the page in the *Kew Bulletin* is cited.

The order adopted for the Phanerogams is that of the Genera Plantarum of Bentham and Hooker, with slight modifications.

The letters N.R. indicate that the specimen in question was not referred to in Retzius' Observationes.

The serial numbers are inserted for convenience of reference to this paper.

Retzius' *Observationes* appeared in six parts, published in the following years: fasc. i. in 1779; ii. in 1781; iii. in 1783; iv. in 1786; v. in 1789; vi. in 1791.

C. E. C. FISCHER.

(The phrases between inverted commas are transcripts of the information on the sheets, and are mostly given exactly as written. Similarly the names which appeared in Retzius are given just as they were published. Hence there are certain apparent inconsistencies in spelling, which have been left unaltered.)

MENISPERMACEAE.

1. *Tiliacora acuminata* (Lam.) Miers (*T. racemosa* Coleb., F.B.I.)
"Smilax zeylanica Kön."
N.R.

CAPPARIDACEAE.

2. *Cleome tenella* Linn. f.
"Cleome tenella. Kön."
Presumably the type of the description in Retz. Obs. iv. 28.
3. *Cadaba fruticosa* (Linn.) Druce (*C. indica* Lam. F.B.I.)
"Cleome fruticosa. König."
N.R.

CARYOPHYLLACEAE.

4. *Polycarpon prostratum* (Forsk.) Pax (*P. Loefflingiae* Benth. & Hook f., F.B.I.)
"Pharnaceum depressum. Löfflingia indica. Corolla calyce brevior purpurea. Hab. in agris oryzaceis König"
The type of *Loefflingia indica* Retz. Obs. iv. 8.
5. *Polycarpon prostratum* Pax
"Pharnaceum depressum Koenig. Stagna tempore calido exarida"

PORTULACACEAE.

6. *Portulaca quadrifida* Linn.
"Portulaca quadrifida. Kön."
N.R.

TAMARICACEAE.

7. *Tamarix gallica* Linn.
"Tamarix Coromandeliana Kön."
N.R.

DIPTEROCARPACEAE.

8. *Vateria copallifera* (Retz.) C. E. C. Fischer, n. comb. (*V. acuminata* Heyne, F.B.I.)
"Elaeocarpus copalliferus Willd. Sp. Pl. 2. p. 1170, 5 arb. certe. Retz. Obs. *Vateria indica* Linn. Dietr.
Tiliaceae-Elaeocarpeae: 11(xi)1.
Tiliaceae E. . Kön." (partly defaced)
The type sheet, described as *Elaeocarpus copalliferus* Retz. Obs. iv. 27.

MALVACEAE.

9. *Sida pilosa* Retz. (*S. humilis* Willd. var. *veronicifolia* Lam., F.B.I.)
"Melochia pyramidata ex fig. cit. *Sida pilosa* Ns. cordifolia Linné
Malvinda altiss. &c. Burm. Zeil: T. 69. f.l.
König Tranqueb."
The type sheet of *Sida pilosa* Retz. Obs. i. 23, which antedates *S. veronicifolia* Lam. by 5 years.

10. *Sida acuta* Burm. (*S. carpinifolia* Linn., F.B.I.)
" *Sida lanceolata*. König."
Type of *Sida lanceolata* Retz. Obs. iv. 28.
11. *Sida rhomboidea* Roxb. (*S. rhombifolia* Lam. var. *rhomboidea* Mast., F.B.I.)
" *Sida*. König "
N.R.

STERCULIACEAE.

12. *Waltheria indica* Linn.
" *Waltheria indica*. König "
N.R.
13. *Abroma augustum* (Linn.) Linn. f.
" *Abroma Wehleri* N."
Type of *Abroma Wehleri* Retz. Obs. v. 27.

TILIACEAE.

14. *Corchorus trilocularis* Linn."
" *Corchorus*. König "
N.R.

ELAEOCARPACEAE.

15. *Elaeocarpus serratus* Linn.
" *Elaeocarpus serrata*. Kön."
Possibly the specimen referred to in Retz. Obs. iv. 27.
16. *Elaeocarpus* sp. (not *serratus* Linn.)
" *E. serratus* India " Mus. Achar.
This sheet has a small twig with 8 leaves and several spikes of flowers.
It is not matched in Herb. Kew among Indian species. There is nothing
to connect it with Koenig.

GERANIACEAE.

17. *Biophytum sensitivum* (Linn.) DC.
" *Oxalis sensitiva*. Kön."
N.R.
18. *Impatiens oppositifolia* Linn.
" *Impatiens rosmarinifolia*. Kön."
Presumably the type sheet of *Impatiens rosmarinifolia* Retz. Obs. v. 29.
19. *Impatiens oppositifolia* Linn.
" *Impatiens*. Koen."
A sheet with 3 plants.
20. *Impatiens latifolia* Linn.
" *Impatiens latifolia*. Kön."
N.R.

RUTACEAE.

21. *Toddalia asiatica* (Linn.) Lam. var. *gracilis* Gamble (*T. aculeata* Pers. in part., F.B.I.) " *Paulinia asiatica*. Kön."
N.R.
22. *Triphasia trifolia* (Burm. f.) P. Wils., det. T. Tanaka (*T. trifoliata* DC., F.B.I. " *Triphasia trifoliata* ad Retzium misit König
Limonia trifolia."
N.R.
23. *Pleiospermum alatum* (W. & A.) Swingle, det. T. Tanaka (*Limonia alata* W. & A., F.B.I.)
" *Aurantiaceae* Endl. *Triphasia trifoliata* DC.
Limonia trifoliata Linn.
Mantiss. Jacq. ic.
Citrus trifoliata Linn. Thunb.
Willd. 6 certe
Aegle sepiaria
Limonia spec. Kön.
Ind. orient."

N.R.

24. *Atalantia monophylla* (Linn.) Corr.
 " *Turraea virens*. Kön."
 Probably the basis for the short description under *Turraea virens* L.
 in Retz. Obs. iv. 25.
25. *Feronia limonia* (Linn.) Swingle (*F. Elephantum* Corr., F.B.I.)
 " *Limonia acidissima*. Elephant apples Angl. Balangas lusitanor.
 Wlangai Tamulorum. Crataeva species Kön."
 Quoted under *Limonia acidissima* L. in Retz. Obs. iv. 26.

BURSERACEAE.

26. *Canarium zeylanicum* (Retz.) Bl.
 " *Amyris elemifera*. Polygama hexandra. Kackune Gaht. Kön."
 The type sheet of *Amyris zeylanica* Retz. Obs. iv. 25.

CELASTRACEAE.

27. *Elaeodendron glaucum* (Rottb.) Pers.
 " *Elaeodendron glaucum* Pers. Genus novum Arbor pentandr: mono-
 gyn. Fl. infero, Corolla pentapetala, stylo
 conico; Bacca drupacea Nux semibiloc:
 Coromandel & Ceylon. *Schrebera albens*"
 Type sheet of the description of *Schrebera albens* Retz. Obs. vi. 25.

RHAMNACEAE.

28. *Zizyphus Oenoplia* (Linn.) Mill.
 " *Rhamnus Oenoplia* Koenig in nemorosis; colitur in hortis Larva Atlas
 in hac, in Terminalia, Jambolifera nun-
 quam in hesperidi Citri, Auran."
 Quoted under *Rhamnus Oenoplia* Linn. in Retz. Obs. ii. 11.
29. *Zizyphus xylopyrus* (Retz.) Willd.
 " *Rhamnus Xylopyrus* Koenig
Hab. in desertis ad pedes montium
Arbor vix homine altior
Fructus ceraso magni major durus insipidus sub adstringens.
Nux inaequalis satis magna"
 The type sheet, described as *Rhamnus Xylopyrus* Retz. Obs. ii. 11.
 Koenig is not referred to in the text but a comparison of the specimen
 with the description seems to show conclusively that this specimen was
 employed.

VITACEAE.

30. *Cissus vitiginea* Linn. (*Vitis Linnaei* Wall., F.B.I.)
 " *Vitis indica* Koen. in nemorosis vulgatiss. Cirrhi caduci relictia parte
 dimidia fructifera "
 N.R.
31. *Cayratia pedata* (Lam.) Gagnep. (*Vitis pedata* Vahl, F.B.I.)
 " *Cissus pedata* Willd. Lam. Willd. Sp. Pl. 2. p. 659. 18. *Cissus hepta-*
phylla Retz. Obs. *Sambucus canadensis*
Burmman non Linn.
Patria: India orient."
- The type sheet of *Cissus heptaphylla* Retz. Obs. v. 22.

- *32. *Leea macrophylla* Roxb. ?

" *Aralia Lappaefolia* N."

- *33. *Leea macrophylla* Roxb. ?

" *Aralia Lappaefolia* N."

*Each of these sheets has a single leaf, very much smaller in the first
 than in the second, with a small inflorescence. They are insufficient for
 determination with certitude. They form the basis for the description
 of *Aralia lappaefolia* Retz. Obs. vi. 27.

SAPINDACEAE.

34. *Sapindus laurifolius* Vahl (*S. trifolius* Hiern, non Linn., in part, F.B.I.)
 " *Sapindus trifoliata* Kön."
 N.R.

ANACARDIACEAE.

35. *Semecarpus Anacardium* Linn. f.
 "Melanthera. Anacardium Verum Koenig"
 N.R.
 It is probably a duplicate of Koenig's specimen referred to in Linn. f.'s description.

PAPILIONACEAE.

36. *Crotalaria sericea* Retz.
 "Crotalaria sericea N."
 The type of the description in Retz. Obs. v. 26.
37. *Crotalaria juncea* Linn.
 "Crotalaria linifolia L. Koenig"
 First written "juncea," which was struck out.
 This is evidently the specimen correctly referred to *Crotalaria juncea* Linn. in Retz. Obs. ii. 21, and incorrectly to *C. linifolia* Linn. f. in Retz. Obs. v. 26.
 The pods are ferruginous velvety.
38. *Psoralea corylifolia* Linn.
 "Psoralea corylifolia Koenig"
 N.R.
39. *Indigofera linifolia* (Linn. f.) Retz.
 Mus. Achar. "Ind. or. I. linifolia"
 Referred to in Retz. Obs. iv. 29.
40. *Indigofera linifolia* Retz.
 "Indigofera linifolia. H. Hafn."
 Evidently from Hort. Hafniensis and possibly not connected with Koenig. Neither sheet appears to have been used for the description of *I. linifolia* in Retz. Obs. vi. 33, nor for the drawing, t. 3. Both are mere scraps.
41. *Indigofera enneaphylla* Linn.
 "Indigofera enneaphylla. Kön. Pluk. t. 166. f. 2."
 This must be the specimen referred to in Retz. Obs. iv. 29.
42. *Indigofera pentaphylla* Linn.
 "Indigofera fragrans. Kön."
 Type of *Indigofera fragrans* Retz. Obs. iv. 29.
43. *Tephrosia purpurea* (Linn.) Pers.
 "Galega fruticosa. Kön."
 N.R.
44. *Tephrosia purpurea* Pers.
 "König"
 N.R.
45. *Sesbania aegyptiaca* Pers.
 "Aeschynomene. Kön."
 N.R.
46. *Sesbania aegyptiaca* Pers.
 "Aeschynomene Sesban. floribus atropurpureis esculentis Kön."
 Probably the basis of remarks under *Aeschynomene Sesban* L. in Retz. Obs. vi. 33.
47. *Sesbania procumbens* (Roxb.) W. & A.
 "Aeschynomene Sesban. Koenig."
 N.R.
48. *Zornia conjugata* (Willd.) Sm. (*Z. diphylla* Pers. var. *zeylonensis* Baker, F.B.I.)
 "Zornia diphylla haud" and on label pasted on front
 "Hedysarum diphyllum Kg"
 N.R.

49. *Stylosanthes fruticosa* (Retz.) Alston (*S. mucronata* Willd., F.B.I.)
 "Hedysarum hamatum. *Arachis fruticosa*. Trifol. procumbens fl.
 Zeyl. 553.
 Burm. Zeyl. t. 106 f. 2. sec. König.
 Tranquebar Kön."

A later hand has written above the other inscriptions "*Stylosanthes mucronata* Willd."

This and the next are clearly the specimens quoted under *Arachis fruticosa* Retz. Obs. v. 26, and therefore form the types.
50. *Stylosanthes fruticosa* Alston
 "Hedysarum hamatum? *Arachis fruticosa*.
 Trifol. procumbens Fl. Zeyl. 553.
 Burm. Zeylon. t. 106 f. 2
Hab. in locis aridis Tranqueb. König "
51. *Stylosanthes fruticosa* Alston
 On small label pasted in front
 "Hedysar. hamatum pedunculus superus
 tubulosus est in Arachide "
52. *Uraria lagopodioides* (Linn.) Desv. (*U. lagopoides* DC., F.B.I.)
 "Hedysarum Lagopus? K."
 N.R.
53. *Eleiotis sororia* (Linn.) DC.
 "Hedysarum sororium. König. *Hallia sororia* Pers."
 N.R.
54. *Alysicarpus bupleurifolius* (Linn.) DC.
 "Hedysarum gramineum N. Kön." and on label attached by a pin
 "Alysicarpus bupleurifolius DC."
 The type of *Hedysarum gramineum* Retz. Obs. v. 26.
55. *Desmodium biarticulatum* (Linn.) Benth.
 "Hedysarum biarticulatum. König "
 N.R.
56. *Desmodium triflorum* (Linn.) DC.
 "Hedysarum triflorum Koen."
 N.R.
57. *Desmodium triflorum* DC.
 "Koenig "
 N.R.
58. *Rhynchosia rufescens* (Willd.) DC.
 "König "
 N.R.
59. *Flemingia lineata* (Linn.) Roxb.
 "Hedysarum lineatum. König "
 N.R.
60. *Flemingia lineata* Roxb.
 "Hedysarum. Kön."
 N.R.
61. *Pterocarpus santalinus* Linn. f.
 "Santalum rubrum officinarum König
Stam: filam. 9 distinctis, *Cor.* papilionacea
 crispata, flava."
 N.R.
62. *Pongamia pinnata* (Linn.) Merr. (*P. glabra* Vent., F.B.I.)
 "Dalbergia arborea Willd. Sp. Pl. 3. 902. 3.
Cal. patenti-campanulatus, truncatus, denti-
 bus 4 vix manifestis.
Vex. subrotundum alis & carina vix longius,
 extus hirtum, flavum
Alae lanceolatae obtusae medio carinae quasi
 adglutinatae, rubrae.

Carina falcata versus apicem hirta, longitudine fere alarum, undique dehiscens.
Filamenta 10, omnia connata in vaginam dimidio suo superiore latere fissam.
Antherae fere sagittatae basi setas nonnullas emittunt.
Germen pilosum, compressum.
Stylus adscendens. *Stigma* simplex acutum.
 Pongam seu Minari Rheed. H. Mal. vi. p. 5. t. 3.
 Funis convolutus? Rumph. v. t. 37. f.l. vel malaparius ib. iii. t. 117. sed in utraque figura racemi ramosi. König."

N.R.

63. *Derris scandens* (Roxb.) Benth.
 " *Dalbergia lanceolaria*. Glycine. König "

N.R.

64. *Sophora tomentosa* Linn.
 " *Sophora tomentosa*. tayanpa Zeilon. König "

N.R.

CAESALPINIACEAE.

65. *Cassia Fistula* Linn.
 " *Cassia fistula*. Kön." N.R.
 66. *Cassia occidentalis* Linn.
 " *Cassia*. König " N.R.
 67. *Cassia pumila* Lam.
 " *Aeschynomene*. Kön." N.R.

MIMOSACEAE.

68. *Entada scandens* Linn.
 " *Mimosa scandens*. Kön." N.R.
 69. *Acacia planifrons* W. & A.
 " *Mimosa frons latiss.* Kön." N.R.
 70. *Acacia arabica* (Lam.) Willd.
 " *Mimosa nilotica*. König. 86. *Acacia Arabica* Willd." N.R.

SAXIFRAGACEAE.

71. **Vahlia digyna** (Retz.) O. Ktze. (*V. viscosa* Roxb., F.B.I.)
 " *Oldenlandia digyna*.
Cal. 5-fid. tubo globoso
Cor. marcescens.
Caps. e calyce sub-2-locul.
Sem. scobiform.
 5 dra 2 gyn. flore supero 5 pet. Koen."
 The type specimen, described as *Oldenlandia digyna* Retz. Obs. iv. 23.
 72. **Vahlia pentandra** (Retz.) C. E. C. Fischer, n. comb. (*V. oldenlandioides* Roxb., F.B.I.)
 " *Oldenlandia pentandra*. Koenig "
 The type specimen described as *Oldenlandia pentandra* Retz. Obs. iv. 22.
 The description is misleading as regards the pistil, there are 2 distinct styles. The specific epithet *pentandra* is the earliest and must be adopted.

DROSERACEAE.

73. *Drosera indica* Linn.
" *Drosera indica*. Kön."
N.R.

COMBRETACEAE.

74. *Anogeissus latifolia* Wall. and *Combretum ovalifolium* Roxb.
" *Terminalia*. videtur *Belerica* vel proxima. König "
This sheet is a mixture of a small spray of flowers of *Anogeissus latifolia* Wall. and 3 separate small leaves of *Combretum ovalifolium* Roxb.
75. ***Terminalia Chebula*** Retz.
" *Terminalia Chebula*. Kön."
The type specimen, described in Retz. Obs. v. 31.

MYRTACEAE.

76. *Syzygium zeylanicum* (Linn.) DC. (*Eugenia zeylanica* Wight, F.B.I.)
" *Myrtus Zeylanica*. Kön."
N.R.

MELASTOMACEAE.

77. ***Memecylon grande*** Retz.
" *Memecylon grande*. Kön."
The type specimen, described in Retz. Obs. iv. 26.

LYTHRACEAE.

78. *Rotala leptopetala* (Bl.) Koehne (*Ammannia pentandra* Roxb. in part., F.B.I.)
" *Indica* W.
Peplis zeylanica. Kön."
N.R.

79. *Pemphis acidula* Forst.
" *Lythrum fruticosum*. videtur *Pemphis acidula* Forst. vel *Mangium Porcellanicum* Rumph. Kön."
N.R.

SAMYDACEAE.

80. *Casearia tomentosa* Roxb.
" *Samyda octandra* Kön. *Casearia glomerata* videtur. Tsierou Kanelli Rheed.
P.v. t. 50 ? "
N.R.

FICOIDACEAE.

81. *Mollugo Cerviana* (Linn.) Ser.
" *Pharnaceum Cerviana*. Koenig. in aridis "
N.R.
82. *Mollugo disticha* (Linn.) Ser.
" *Pharnaceum distichum*. König "
N.R.
83. *Mollugo disticha* Ser.
" *Pharnaceum mollugo* ! König "
N.R.

RUBIACEAE.

84. *Hedyotis fruticosa* Linn.
" *Hedyotis fruticosa*. Kön."
N.R.
85. ***Oldenlandia trinervia*** Retz.
" *Oldenlandia trinervia*. Kön."
Presumably the type sheet of the description in Retz. Obs. iv. 23.
86. *Oldenlandia biflora* Linn.
" *Oldenlandia paniculata*. Kön."
N.R.

87. *Timonius Jambosella* (Gaertn.) Thw.
 "Fuchsia Kön:" and on label pinned on:
 "Cal. inferus, campanulatus, quadridentatus,
 coriaceus, utrinque hirtus
 Cor. infundubuliformis, supera, coriacea,
 extus flava, hirta.
 Tubo brevi
 Limbo quadrifido, laciniis lanceolatis obtusis.
 Stam. 4. filamentis brevissimis supra tubum limbo adnatis
 Antherae longae, lineares, erectae in medio
 circiter filamento impositae.
 Germen superum, c. calyce connatum.
 Stylus longitudine dupla calycis
 Stigma 4 gon: ? cum acumine"
- N.R.
88. *Randia dumetorum* (Gaertn.) Lam.
 "Heynhold:
 Randia dumetorum Lam. Heynh.
 — spinosa Blume
 Canthium coronatum Lam. *Gardenia dumetorum* Koen. Retz. Obs. 2.
 Ceriscus malabaricus Gaertn.
 Gardenia dumetorum Retz. Willd. Sp. Pl. 1. p. 1229, 13.
 — spinosa Linn. fil.
 Posoqueria dumetorum Roxb.
 Patria: India orientalis in spinetis"
 The type of *Gardenia dumetorum* Retz. Obs. ii. 14.
89. *Randia uliginosa* (Retz.) DC.
 "Gardenia uliginosa. Frutex ramis majoribus obsolete 4-angulis,
 ramulis decussatis patentissimis folio brevioribus apice clavatis, spinis quaternis radiatis.
 In terra Cataccensi subarborea"
 The sheet holds one very short piece of twig with one complete leaf,
 another leaf with a piece missing and scraps of two others, all small.
 There are no spines. There are also three flowers separately pasted
 on. It is doubtful whether this is the specimen quoted under *Gardenia*
uliginosa Retz. Obs. ii. 14.
90. *Ixora Thwaitesii* Hook. f.
 "Ixora alba. König"
 N.R.
91. *Serissa foetida* (Linn. f.) Lam.
 "Manteesia Kaempferi König Amoen. p. 780.
 Lycium Japanicum Thunb. *Indicum* N.
 quod de odore refert Kaempfer falsum est Thunb. & de
 arbore Batavis Strunthout valet"
 The type of *Lycium indicum* Retz. Obs. ii. 12. The species is not indigenous
 in India but has been grown in gardens for very many years.
- 92 ?
 "Rauvolfia nitida König"
 N.R. I have not been able to determine this plant even generically—
 the buds are very young.

COMPOSITAE.

93. *Grangea maderaspatana* (Linn.) Poir.
 "Artemisia littoralis N. Kön."
 Type specimen of *Artemisia littoralis* Retz. Obs. v. 28.
94. *Blumea Wightiana* DC.
 "Baccharis Dioscoridis Königii non Linnei."
 N.R.

95. *Epaltes divaricata* (Linn.) Cass.
 " *Ethulia divaricata*. König "
 N.R.
96. *Wedelia calendulacea* (Linn.) Less.
 " *Verbesina inula*. Kön."
 N.R.
97. *Spilanthes Acmella* (Linn.) Murr.
 " *Verbesina Acmella*. Kön."
 N.R.

PLUMBAGINACEAE.

98. *Plumbago zeylanica* Linn.
 " *Plumbago Zeylanica*. Koen. in nemorosis "
 N.R.

SAPOTACEAE.

99. *Mimusops hexandra* Roxb.
 " *Tabernaemontana citrifolia* ? Koen. in sylvis.
 Zeylonische Rosinen Busch ? Kalepale Tamulis "
 N.R.

EBENACEAE.

100. *Maba buxifolia* (Rottb.) Pers. var. *microphylla* Thw.
 " *Ehretia* ? Zeylonae in sylvis vulgariss. flores nundum vidit König "
 N.R.
101. *Diospyros peregrina* (Gaertn.) Gürke (*D. Embryopteris* Pers., F.B.I.)
 " *Diospyros* Kön. fructus *Diospyros* "
 N.R.
 Only a fruit cut in two on the sheet.

OLEACEAE.

102. ***Jasminum pubescens*** (Retz.) Willd.
 " *Nyctanthes pubescens* N." and in another hand
 " *Jasminum Pubescens* V."
 The type, described as *Nyctanthes pubescens* Retz. Obs. v. 9.
103. ***Jasminum scandens*** (Retz.) Vahl
 " *Nyctanthes scandens* "
 The type, described as *Nyctanthes scandens* Retz. Obs. v. 9.
104. *Jasminum angustifolium* (Linn.) Willd.
 " *Nyctanthes viminea* N." and in other hands
 " *Jasminum angustifolium* V."
 " *Nyctanthes biflora* "
 The type of *Nyctanthes viminea* Retz. Obs. v. 9.

SALVADORACEAE.

105. *Salvadora persica* Linn.
 " *Embelia Grossularia* Retz. Obs." and in another hand " *Salvadora*
persica W. Sp. p. 695 " and in front the
 words " a Retzio "
 Probably the type of *Embelia Grossularia* Retz. Obs. iv. 24, with
 additional information from Koenig. On a much larger sheet.

APOCYNACEAE.

106. *Cerbera manghas* Linn.
 " *Cerbera manghas* Koen. ad littora maris "
 N.R.
107. ***Hunteria zeylanica*** (Retz.) Gardn. ex Thw. (*H. corymbosa* Roxb., F.B.I.)
 " *Cameraria Zeylanica*. Fl. Zeyl. 404. Kön."
 The twig referred to under *Cameraria zeylanica* Retz. Obs. iv. 24.
108. *Nerium odoratum* Soland.
 " *Nerium oleander* Koen."
 N.R.

ASCLEPIADACEAE.

109. **Gymnema sylvestre** (Retz.) R. Br.
 " *Periploca sylvestris* Kön." and in another hand " *Gymnema sylvestre* Br."
 On front : " Ind. Orient."
 The type, described as *Periploca sylvestris* Retz. Obs. ii. 15.
110. **Cynanchum tunicatum** (Retz.) Alston (*C. pauciflorum* R. Br., F.B.I.)
 " *Periploca tunicata* Koen."
 The type, described as *Periploca tunicata* Retz. Obs. ii. 15.
111. **Leptadenia reticulata** (Retz.) W. & A.
 " *Cynanchum reticulatum* Koen. an Apocyn. reticul. Burm."
 The type, described as *Cynanchum reticulatum* Retz. Obs. ii. 15.
112. *Marsdenia volubilis* (Linn. f.) T. Cooke (*Dregea volubilis* Benth., F.B.I.)
 " *Asclepias viridiflora*. Wata kaka Codd. Rheed. Fl. Mal. Kön."
 and in another hand : " *Hoya viridiflora* Br."
 Possibly a duplicate of the specimen sent to Linn. f. and described as *Asclepias volubilis* Linn. f. Suppl. 170.

LOGANIACEAE.

113. *Strychnos potatorum* Linn. f.
 " *Strychnos Potatorum*. Tetan. Kottae Koenig. Hab. ad pedes montium raro. Colitur in hortis ob odorem florum fragrantiss. Fructus nuci Vomica simil. sed minor."
 Presumably the type of the description of *Strychnos Tetankotta* Retz. Obs. ii. 12 and possibly duplicate of *S. potatorum* Linn. f. Suppl. 148.
114. *Strychnos Nux-vomica* (Retz.) Linn.
 " Fam. Contortae-Apocynae : 5. 1.
Strychnos nux vomica Willd. Sp. Pl. p. 1052.
 1. L. Heynh.
 " Obs. Koenig adscripsit
 " Lignum Colubrinum
 " Nux Vomica ut lubet
 " in viciniis montium Palliacattensium vulgatiss. in Zeylona copiosae
 Fam. Loganiaceae Endl."

N.R.

GENTIANACEAE.

115. *Enicostemma verticillatum* (Linn.) Engl. (*E. littoralis* Bl., F.B.I.)
 " *Exacum verticillatum* Willd.? *Gentiana verticillata* β Koen."
 The specimen quoted under *Gentiana verticillaris* Linn. in Retz. Obs. ii. 15.
116. *Enicostemma verticillatum* Engl.
 " *Exacum hyssopifolium*. *Gentiana verticillata* α N. Koen."
 The specimen quoted under *Gentiana verticillaris* Linn. α in Retz. Obs. ii. 15.
117. *Exacum bicolor* Roxb.
 " *Chironia trinervia*. Kön."
 N.R.
118. *Canscora heteroclita* (Linn.) Gilg (*C. sessiliflora* R. & S., F.B.I.)
 " *Exacum heteroclitum*, *Gentiana heteroclita* Koenig. in graminosis"
 N.R.

BORAGINACEAE.

119. *Heliotropium supinum* Linn. var. *malabaricum* C. B. Clarke
 " *Heliotropium malabaricum* Burm. Kön."
 Type of *Heliotropium malabaricum* Retz. Obs. iv. 24.
120. *Heliotropium ovalifolium* Forsk.
 " *Heliotropium Coromandelianum* Koen."
 Type of *Heliotropium Coromandelianum* Retz. Obs. ii. 9.

121. *Heliotropium ovalifolium* Forsk.
 " *Heliotropium Coromandelianum* Retz. Obs. sec. spec. Retz."
 in pencil " *Coromandel. vel nova species. ex Swartz* "
 Perhaps sent by Swartz. The specimen, a single very small plant,
 is mounted on slightly larger-sized blue-tinted paper.
122. *Heliotropium scabrum* Retz.
 " *Heliotropium marifolium* N. supinum ? Koen."
 Presumably the type of *H. marifolium* Retz. Obs. ii. 8, which has been
 united by Gamble (Fl. Pres. Mad. 897) with *H. scabrum* Retz. Obs. ii. 8,
 the type of which has not been found in this collection.

CONVOLVULACEAE.

123. *Cressa cretica* Linn.
 " *Cressa indica* Retz. Obs. 4. Willd. Sp. Pl. 1. p. 1320. 2.
Convolvulaceae : 5. 2. Heynh. Koen.
 Patria : India."
 The type of *Cressa indica* Retz. Obs. iv. 24.
124. *Jacquemontia paniculata* (Burm. f.) Hallier. f. (*Convolvulus parviflorus*
 Vahl, F.B.I.)
 " *Ipomoea paniculata* Burm. Kön."
 N.R.
125. *Quamoclit pennata* (Lam.) Boj. (*Ipomoea Quamoclit* Linn., F.B.I.)
 " *Ipomoea Quamoclit.* Koen."
 N.R.
126. *Ipomoea coptica* (Linn.) Roth (*I. dissecta* Willd., F.B.I.)
 " *Convolvulus copticus* Koenig. in graminosis subaridis "
 The specimen quoted under *Convolvulus copticus* Linn. in Retz. Obs. ii.
 11.
127. *Ipomoea obscura* (Linn.) Ker-Gawl.
 " *Convolvulus gemellus* Koen. ruderata et margines hortor. Floret
 ante merid. ad horam 12."
 N.R.
128. *Ipomoea rugosa* (Rottl.) Choisy (*I. Beladamboe* Roem. & Sch., F.B.I.)
 " *Convolvulus muricatus* Koen. Loca arida sabulosa. *Cor. albidæ. hæc*
rubus prope Madras lecta "
 N.R.
129. *Ipomoea Pes-caprae* (Linn.) Roth (*I. biloba* Forsk., F.B.I.)
 " *Convolvulus Pes Caprae.* Koen. in arena "
 N.R.

SOLANACEAE.

130. *Solanum pubescens* Willd.
 " *Solanum verbascifolium* Koenig. in hortis solo argilloso, raro."
 N.R.
131. *Capsicum frutescens* Linn.
 " *Capsicum frutescens* Koenig. in sylvis Johannaë spont. præfertur pro
 annuo in confectione Atsia."
 N.R.
132. *Capsicum annuum* Linn.
 " *Capsicum grossum* Koen. in hortis colitur. minus ardens reliquis. ex
 ejus capsula Atsias præparatur."
 N.R.
133. *Datura fastuosa* Linn.
 " *Datura Tatula.* Koenig "
 N.R.
134. *Datura fastuosa* Linn.
 " *Datura ferox* ? Kön."
 N.R.

SCROPHULARIACEAE.

135. **Lindenbergia ruderalis** (Retz.) J. O. Voigt (*L. urticaefolia* Lehm. ex Link & Otto, F.B.I.)
 " *Stemodia ruderalis* N. flores aurei proxima Ghonakola Herm. M. Zeyl."
 Type, described as *Stemodia ruderalis* Retz. Obs. v. 25.
136. *Limnophila sessilis* (Benth.) C. E. C. Fischer, n. comb. (*Limnophila conferta* Benth., F.B.I.)
 " *Rhinanthus indicus* Kön."
 N.R. The new combination is based on *Stemodia sessilis* Benth. in Bot. Reg. xvii. sub t. 1470, sp. 8 (1832).
137. *Limnophila indica* (Linn.) Druce (*L. gratioides* R. Br., F.B.I.)
 " *Rhinanthus indicus* var. Kön."
 N.R.
138. *Artanema longifolium* (Linn.) Vatke (*A. sesamoides* Benth., F.B.I.)
 " *Sesamum javanicum* Burm. Kön."
 Presumably the specimen on which remarks under *Sesamum javanicum* Burm. in Retz. Obs. iv. 28 were based.
139. **Ilysanthes oppositifolia** (Retz.) Urb. (*Bonnaya oppositifolia* Spreng., F.B.I.)
 " *Gratiola* (hyssopioides) stricta habitat in agris Oryzaceis & humidiusculis. viget tempore pluvioso "
 and by other hands: " *Gratiola oppositifolia* Retz. Willd. Sp. Pl. 1. 105. 13. Grat. serrata Roxb."
 " *Gratiola oppositifolia* Willd. Retz. Obs. fasc. 4. p. 8.
 Manu Retzii, qui dedit 1808
 Patria: Tranquebar "
 Without doubt the type, described as *Gratiola oppositifolia* Retz. Obs. iv. 8.
140. *Ilysanthes parviflora* (Roxb.) Benth.
 " *Rhinanthus indicus* Kön."
 N.R.
141. **Ilysanthes veronicifolia** (Retz.) Urb. (*Bonnaya veronicifolia* Spreng., F.B.I.)
 " *Gratifolia veronicaefolia*. Kön."
 Type, described as *Gratiola veronicaefolia* Retz. Obs. iv. 8.
142. *Ilysanthes veronicifolia* Urb.
 " *Gratiola grandiflora* Königii. Hab. prope Tranquebar Madras, Siam & Malacca solo humido fertili"
 The type of *Gratiola grandiflora* Retz. Obs. iv. 8, which Gamble (Fl. Pres. Mad. 962) unites with *Ilysanthes veronicifolia* Urb.
143. **Microcarpaea minima** (Retz.) Merr. (*M. muscosa* R. Br., F.B.I.)
 " *Paederota minima* Kön."
 The type, described as *Paederota minima* Retz. Obs. v. 10.
144. *Striga asiatica* (Linn.) O. Ktze. (*S. euphrasioides* Benth., F.B.I.)
 " *Buchnera asiatica*. Tottea. Königii "
 N.R.

BIGNONIACEAE.

145. *Oroxylum indicum* (Linn.) Vent.
 " *Bignonia indica*. Kön."
 N.R.
146. *Stereospermum chelonoides* (Linn. f.) Haines
 " *Bignonia Chelonoides*. Kön."
 Probably a duplicate of the type of *Bignonia Chelonoides* Linn. f. Suppl. 282, where the derivation from Koenig is acknowledged.

PEDALIACEAE.

147. *Sesamum indicum* Linn.
 " Bignoniaceae Endl. *Sesamum luteum* Willd. Sp. Pl. 3. p. 358. 2. Kön."
 Presumably the specimen quoted under *Sesamum luteum* Retz. Obs. vi. 31.
148. *Sesamum prostratum* Retz.
 " *Sesamum prostratum*. Koen."
 Type, described in Retz. Obs. iv. 28.

ACANTHACEAE.

149. *Thunbergia fragrans* Roxb.
 " planta scandens. Cal. 10 fid. dentib. acutis pilosis
 Cor. tubus basi parum curvus, demum
 In another hand : crassior.
 " *Thunbergia Stam. 4. antheris sagitt. Roxburgia* Kön.
fragrans." an *Thunbergia* sp. Kön."
 N.R.
150. *Elytraria acaulis* (Linn. f.) Lindau (*E. crenata* Vahl, F.B.I.)
 On label pasted in front : On back in a later hand :
 " *Justicia acaulis* " *Elytraria crenata* "
 Scripsit Lindén. König."
 This and the next are possibly duplicates of the type of *Justicia acaulis* Linn. f. Suppl. 84; derivation from Koenig is acknowledged. They are also used under *J. acaulis* L. Suppl. in Retz. Obs. iv. 7.
151. *Elytraria acaulis* Lindau
 On front " In locis aridis, ad vias publicas "
 and on back, in same hand : " *Elytraria. Justicia acaulis* "
 N.R.
152. *Dyschoriste madurensis* (Burm. f.) O. Ktze. (*Calophanes littoralis* T.And., F.B.I.)
 " *Ruellia ? Justicia madurensis* Burm. König."
 N.R. Probably a duplicate of the type of *Ruellia littoralis* Linn. f. Suppl. 289, where derivation from Koenig is acknowledged.
153. *Micranthus dorsiflorus* (Retz.) C. E. C. Fischer, n. comb. (*Phaylopsis parviflora* Willd., F.B.I.)
 " *Ruellia dorsiflora* N. Decumbens. Flores albi noctu odori."
 The type, described as *Ruellia dorsiflora* Retz. Obs. vi. 31.
154. *Blepharis repens* (Vahl) Roth (*B. molluginifolia* Pers., F.B.I.)
 " *Acanthus repens*. König."
 N.R.
155. *Barleria longiflora* Linn. f.
 " *Barleria longiflora* König."
 N.R. Probably a duplicate of the type sheet, since Linn. f. in Suppl. 290 acknowledges receipt from Koenig.
156. *Barleria lanceata* (Forsk.) C. Chr. (*B. noctiflora* Linn. f., F.B.I.)
 " *Barleria noctiflora. Caules* sesquipedales fruticulosi, orbiculariter
 diffusi, ramosissimi.
Spinae geminae oppositae, basi ramosae.
Folia ovato-lanceolata, acuminata, pilosa
 spinis breviora.
Crescit in aridis, solo duro ad Tanschaure,
 Madras Naguhr copiose Kön."
 N.R. Probably a duplicate of the type of Linn. f.'s description in Suppl. 220, where acknowledgment to Koenig is made.
 Tanschaure = Tanjore.
157. *Lepidagathis fasciculata* (Retz.) Nees
 " *Ruellia fasciculata. Caule* repente, ramis erectis : *Foliis* lanceolato-
 ovatis, dentatis : *Floribus* terminalibus fasciculatis : *Bracteis* involu-
 cratis.

- An *Ruellia alternata*. Burm. Flora ind. habitat in nemorosis, in vicinia Thermarum Trinquemallensium "
- Type, described as *Ruellia fasciculata* Retz. Obs. iv. 28. Trinquemallensium refers to Trincomalee.
158. *Andrographis paniculata* (Burm. f.) Nees
" *Justicia latebrosa*. In latebrosis intra spinetas absconditas. König "
N.R.
159. *Justicia tranquebarensis* Linn. f.
" *Justicia Tranquebarensis* "
and in another hand : " König in india legit et determinavit "
N.R. Probably a duplicate of the type, as derivation from Koenig is admitted in Linn. f. Suppl. 85.

VERBENACEAE.

160. ***Holmskioldia sanguinea*** Retz.
" *Holmskioldia* "
Presumably the type of the description in Retz. Obs. vi. 31, but there is nothing to connect it with Koenig.
161. *Callicarpa macrophylla* Vahl.
" *Callicarpa macrophylla*. Fomes tomentosa Koen." "
N.R. Perhaps a duplicate of the type specimen, as Vahl refers to Koenig as the collector.
162. *Avicennia officinalis* Linn.
" *Avicennia tomentosa*. *Bontia germinans*. Kön." "
N.R.

LABIATAE.

163. *Geniosporum tenuiflorum* (Linn.) Merr. (*G. prostratum* Benth., F.B.I.)
" *Ocimum menthoides*. Kön." "
N.R.
164. *Geniosporum tenuiflorum* Merr.
" *Ocimum menthoides*. König." "
N.R.
165. *Moschosma polystachyum* (Linn.) Benth.
" *Mentha perilloides*? *Spica secunda* Kön." "
N.R.

AMARANTHACEAE.

166. *Nothosaerva brachiata* (Linn.) Wight
" *Illecebrum* L. *Achyranthes brachiata*. Koenig. in agris oryzaceis "
N.R.
167. *Aerva lanata* (Linn.) Juss.
" *Illecebrum* L. *Achyranthes lanata*. Koenig. in aridis petrosis "
Quoted under *Illecebrum lanatum* Linn. in Retz. Obs. ii. 13.

POLYGONACEAE.

168. *Polygonum plebejum* R. Br.
" *Polygonum ciliare* König "
N.R.
169. *Polygonum barbatum* Linn.
" *Polygonum barbatum*. Kön." "
Probably the specimen referred to under *Polygonum barbatum* L. " e Malabaria " in Retz. Obs. iv. 25.

ARISTOLOCHIACEAE.

170. ***Aristolochia bracteata*** Retz.
" *Aristolochia bracteata*. Kön." "
The type, described in Retz. Obs. v. 29.
171. *Aristolochia indica* Linn.
" *Aristolochia indica*. König "
N.R.

PIPERACEAE.

172. *Piper longum* Linn.
 "Piper longum. pl. monoica Kön."
 Referred to under *Piper longum* L. in Retz. Obs. vi. 19.

LAURACEAE.

173. *Cinnamomum zeylanicum* Bl.
 "Laurus Cassia. Kön."
 N.R.
 174. *Litsea glutinosa* (Lour.) C. B. Robins. (*Litsaea sebifera* Pers., F.B.I.)
 "Laurus involucrata N."
 Type of *Laurus involucrata* Retz. Obs. vi. 27.

LORANTHACEAE.

175. *Loranthus longiflorus* Desr.
 "Loranthus Loniceroides K. L. Koenigii Ag."
 N.R.

EUPHORBIACEAE.

176. **Euphorbia rosea** Retz.
 "Euphorbia rosea. Kön."
 The type, described in Retz. Obs. iv. 26.
 177. *Euphorbia rosea*. Retz.
 "Euphorbia polygonoides. Kön."
 N.R.
 178. *Phyllanthus Urinaria* Linn.
 "Phyllanthus Urinaria. König."
 N.R.
 179. **Phyllanthus simplex** Retz.
 "Phyllanthus simplex König."
 The type, described in Retz. Obs. v. 29.
 180. *Phyllanthus Niruri* Linn.
 "Phyllanthus Niruri. Kön."
 N.R.
 181. *Phyllanthus Niruri* Linn.
Phyllanthus maderaspatensis. König."
 N.R.
 182. **Glochidion stellatum** (Retz.) Bedd. (*G. rigidum* Muell.-Arg., F.B.I.)
 "Phyllanthus stellatus. Kön."
 The type, described as *Phyllanthus stellata* Retz. Obs. v. 29.
 183. *Breynia Vitis-idaea* (Burm.) C. E. C. Fischer, n. comb. (*Breynia rhamnoides* Muell.-Arg., F.B.I.)
 "Phyllanthus rhamnoides. Rhamnus vitis idaea Burm. König."
 Type of *Phyllanthus rhamnoides* Retz. Obs. v. 30.
 184. **Antidesma acidum** Retz. (*A. diandrum* Roth., F.B.I.)
 "Fam. Antidesmeae Endl. *Antidesma acidum* ♀ Retz. Obs. v. p. 30 certe.
 Willd. Sp. iv. 763. 5. Dietr. Syn.
 Patr. : Ind. orient."
 The type, described as *Antidesma acida* Retz. Obs. v. 30.
 185. *Acalypha fruticosa* Forsk.
 "Acalypha betulina. Frutex vix altitudine humana, graveolens aromaticus. medicina Indior. Kön."
 Type of *Acalypha betulina* Retz. Obs. v. 30.
 186. *Mallotus philippinensis* (Lam.) Muell.-Arg.
 "Croton. Caps. coccinea, sericeo toment. Hamparandale Cingal. Kön."
 Probably the type of *Croton punctatum* Retz. Obs. v. 30. The specimen has leaves and fruit and no flowers, which fits in with the description.
 187. *Tragia involucrata* Linn.
 "Tragia involucrata. König."
 N.R.

188. *Sebastiana Chamaelea* (Linn.) Muell.-Arg.
 " *Tragia Chamaelea* ? Kön.
 N.R.

ULMACEAE.

189. *Trema orientalis* (Linn.) Bl.
 " *Celtis orientalis*. Kön."
 The specimen referred to under *Celtis orientalis* L. in Retz. Obs. vi. 34.

MORACEAE.

190. *Streblus asper* Lour.
 " *Trophis aspera*. Cudranus amboin : Rumph V. p. 25. t. 15. f. l. 2
 dioica sed Cudrani Rumph. sunt spinosi
Flor. 12. 13. sessiles.
Cal. 0.
Cor. 4 pet. C. ad basin usque 4 fidi petalis
 lanceolatis membranaceis
Stam. 4. filamentis corolla longior : antheris
 reniformibus
Pistilli rudimentum oblongum tomentosum.
Styl. & Stigm : 0 "

Type of *Trophis aspera* Retz. Obs. V. 30.

URTICACEAE.

191. *Pouzolzia indica* (Linn.) Gaud.
 " *Urtica alienata*. Kön."
 N.R.

BURMANNIACEAE.

192. *Burmannia disticha* Linn.
 " *Burmannia disticha*, an biflora. Kön."
 N.R.
 193. *Burmannia caelestis* D. Don
 " *Burmannia monantha*. Kön."
 N.R.

ZINGIBERACEAE.

194. *Curcuma angustifolia* Roxb.
 " *Curcuma globosa* Koen. *Hab.* in nemorosis prope Midnapaur.
Radices inter optima remedia incolorum.
 Colore subcitrino. Pulcherrima spica comosa "
 N.R.
 195. ***Costus speciosus*** (Retz.) Sm.
 " *Hellenia grandiflora* N. Hb. *Spiralis* Rumphii. monandria
Banksea speciosa Kön. *Costus arab.* Sw.
Jacqu. speciosus Smith."
 Type of *Banksea speciosa* Retz. Obs. iii. 75, changed to *Hellenia grandiflora* Retz. Obs. vi. 18.
 196. ***Alpinia Allughas*** (Retz.) Rosc.
 " *Heritiera Allughas* Retz. Obs. vi."
 The type, described as *Heritiera Allughas* Retz. Obs. vi. 17 & t. 1.

HAEMODORACEAE.

197. *Peliosanthes neilgherrensis* Wight.
 " *Orchis* Amb. major radice digit. p. 116 Rumph. vi. t. 54. f. l. Sp. 2 ?
 Hexandra 1-gyn. Baccæ 5 ad 9 distinctæ
 ovatae, laeves, nitidissime coeruleae. Sem.
 magnum subnubilans corneum albicans.
 an ex genere *Palmarum* König. *Dracaena*
 species ? "
 N.R.

LILIACEAE.

198. *Gloriosa superba* Linn.
 " *Gloriosa superba*. König."
 N.B.
199. *Anthericum ramosum* Linn.
 " *Anthericum ramosum*. K."
 N.R. Possibly not a Koenig specimen, and if from India, then from a garden.

COMMELINACEAE.

200. *Aneilema vaginatum* (Linn.) R. Br.
 " *Commelina vaginata*. Kön."
 N.R. Possibly a duplicate of the type of *Commelina vaginata* Linn. Mant. 177.

ARACEAE.

201. ***Cryptocoryne spiralis*** (Retz.) Fisch.
 " *Arum spirale* N. Tranqueb."
 The type, described as *Arum spirale* Retz. Obs. i. 30.
202. *Rhaphidophora lacinata* (Burm. f.) Merr. (*R. pertusa* Schott)
 " *Calla. Polypodium laciniatum* Burm. Kön."
 N.R.

APONOGETONACEAE.

203. *Aponogeton natans* (Linn.) Engl. & Kr. (*A. monostachyon* Linn., F.B.I.)
 " *Aponogeton* spec. ignota. Saururi Sp. nov. Kön. spatha persistens"
 N.R.

CYPERACEAE.

204. *Kyllinga monocephala* Rottb.
 " *Cyperus monostachyos*? *Cyperus* (monostachyos) culmo triquetro nudo, spica simplici ovata terminali: squamis mucronatis Lin. Mant. pl. 2. p. 180. n. 24.
 Habitat in India orientali. Koenig. Nova hac specie me ditavit Dnus: Mag: Lindwall."
 N.R.
205. *Pycneus sanguinolentus* (Vahl) Nees
 " *Cyperus cruentus* N."
 Type of *Cyperus cruentus* Retz. Obs. v. 13, non Rottb.
206. *Pycneus pumilus* (Linn.) Domin (*P. nitens* Nees, F.B.I.)
 " *Cyperus cruentus* N."
 Type of *Cyperus nitens* Retz. Obs. v. 13, non Rottb.
207. *Pycneus pumilus* Domin
 " *Cyperus pygmaeus* N. Koenig."
 Type of *Cyperus pygmaeus* Retz. Obs. iv. 9.
208. *Pycneus globosus* (All.) Reichb. (*P. capillaris* Nees var. *nilagiricus* C. B. Cl., F.B.I.)
 " *Cyperus flavidus* N."
 Type of *Cyperus flavidus* Retz. Obs. v. 13, non auct. Vide K.B. 1931, 262.
209. *Pycneus odoratus* (Linn.) Reichb. (*P. polystachyus* Beauv., F.B.I.)
 " *Cyperus polystachyos*. Kön."
 N.R. Perhaps a duplicate of the type of *Cyperus polystachyos* Rottb. Descr. & Ic. 39.
210. *Juncellus laevigatus* (Linn.) C. B. Clarke
 " *Cyperus mucronatus* N."
 Type of *Cyperus mucronatus* Retz. Obs. v. 10.
211. *Cyperus castaneus* Willd.
 " *Cyperus squarrosus* Fr. R. König."
 N.R.
212. *Cyperus tenuispicus* Steud. (*C. flavidus* C. B. Clarke, F.B.I., non Retz.)
 " *Cyperus Haspan*. König."
 N.R. Perhaps a duplicate of one of the specimens quoted under *Cyperus Haspan* in Rottb. Descr. & Ic. 36.

213. **Cyperus niveus** Retz.
"Cyperus niveus N."
Type, described in Retz. Obs. v. 12.
214. **Cyperus leucocephalus** Retz.
"Cyperus leucocephalus N."
Type, described in Retz. Obs. v. 11.
215. **Cyperus arenarius** Retz.
"Cyperus arenarius. Kön."
Type, described in Retz. Obs. iv. 9.
216. **Cyperus compressus** Linn.
"Cyperus compressus. Kön."
Referred to in Retz. Obs. iv. 11 as pentaphyllous, with long leaves.
217. **Cyperus Iria** Linn.
"Cyperus Santonici Fr. R. König."
N.R. Probably a duplicate of the type of *Cyperus Santonici* Rottb. Descr. & Ic. 41.
218. **Cyperus distans** Linn. f.
"Cyperus elatus Fr. R. distans L. König."
N.R.
219. **Cyperus bulbosus** Vahl.
"Cyperus Jeminicus. Kön."
Quoted under *C. Jeminicus* Retz. Obs. iv. 11.
220. **Cyperus corymbosus** Rottb.
"Cyperus diphyllus N."
Type of *C. diphyllus* Retz. Obs. v. 11.
221. **Cyperus longus** Linn. subspecies *mitis* Steud. det. G. Kükenthal.
"Cyperus tenuiflorus. Kön."
N.R.
222. **Cyperus rotundus** Linn. var. *tuberosus* (Rottb.) Kük. det. G. Kükenthal
"Cyperus Pangorei. Kön."
Type of *C. Pangorei* Retz. Obs. iv. 10, non Rottb.
223. **Cyperus stoloniferus** Retz.
"Cyperus stoloniferus N. König."
The type, described in Retz. Obs. iv. 10.
224. **Cyperus stoloniferus** Retz.
"Cyperus rotundus. Kön."
N.R.
225. **Cyperus imbricatus** Retz. (*C. radiatus* Vahl, F.B.I.)
"Cyperus imbricatus N."
The type, described in Retz. Obs. v. 11. Vide K.B. 1931, 262.
226. **Cyperus exaltatus** Retz.
"Cyperus exaltatus N."
The type, described in Retz. Obs. v. 11.
227. **Cyperus exaltatus** Retz.
"Cyperus racemosus N."
Type of *C. racemosus* Retz. Obs. vi. 20.
228. **Cyperus exaltatus** Retz.
"Cyperus canaliculatus "
The specific name first written was "alopecuroides" which is struck out.
Type of *C. canaliculatus* Retz. Obs. vi. 20.
229. **Mariscus dubius** (Rottb.) Kük. (*M. Dregeanus* Kunth, F.B.I.)
"Schoenus Bobartiae König."
Type of *Schoenus Bobartiae* Retz. Obs. iv. 9 and perhaps a duplicate of the type of *Cyperus dubius* Rottb. Descr. & Ic. 20. For name *Mariscus dubius* see K.B. 1931, 263.
230. **Mariscus panicus** (Rottb.) Vahl
"Kyllingia Panicea Fr. Rottb. ic. t. iv. f.1. Scirpus cyperoides König."
N.R. Perhaps a duplicate of the type of *Kyllingia panicea* Rottb. Descr. & Ic., who acknowledges receipt from König.

231. **Mariscus cyperinus** (Retz.) Vahl
 " *Kyllingia cyperina* N."
 The type, described as *Kyllingia cyperina* Retz. Obs. vi. 21.
232. **Eleocharis atropurpurea** (Retz.) Kunth
 " *Isolepis atropurpurea* "
 Probably the type, described as *Scirpus atropurpureus* Retz. Obs. v. 14.
233. **Eleocharis Chaetaria** Roem. & Sch.
 " *Eleocharis setacea* "
 Probably the type, described as *Cyperus setaceus* Retz. Obs. v. 10.
234. **Fimbristylis nutans** (Retz.) Vahl
 " *Scirpus nutans* K. *Scirpus nutans*, Culmo nudo, stricto, anguloso.
 Spica terminali solitar. nutanti
 habitat in uliginosis Malacca."
 The type, described as *Scirpus nutans* Retz. Obs. iv. 12.
235. **Fimbristylis polytrichoides** (Retz.) R. Br.
 " *Scirpus Polytrichoides*. Kön."
 The type, described as *Scirpus Polytrichoides* Retz. Obs. iv. 11.
236. **Fimbristylis schoenoides** (Retz.) Vahl
 " *Scirpus schoenoides* "
 The type, described as *Scirpus Schoenoides* Retz. Obs. v. 14.
237. **Fimbristylis dipsacea** Benth.
 " *Scirpus dipsaceus* var. *maj.* Kön."
 N.R.
238. **Fimbristylis annua** (All.) Roem. & Sch. var. *diphylla* Kükenthal (*F. diphylla* Vahl, F.B.I.)
 " *Scirpus dichotomus* α Kön."
 Quoted under *Scirpus dichotomus* L. β in Retz. Obs. iv. 12.
239. **Fimbristylis annua** R. & S. var. *diphylla* Kük.
 " *Scirpus dichotomus* β . Kön."
 Quoted under *Scirpus dichotomus* L. in Retz. Obs. iv. 12.
240. **Fimbristylis annua** R. & S. var. *diphylla* Kük.
 " *Scirpus diphyllus* N."
 Quoted under *Scirpus diphyllus* Retz. Obs. v. 15.
241. **Fimbristylis dichotoma** (Linn.) Vahl
 " *Scirpus (pallidus) K.) aestivalis* 1^{andr.} vix *Scirpus* "
 Type of *Scirpus aestivalis* Retz. Obs. iv. 12. Vide K.B. 1931, 264.
242. **Fimbristylis ferruginea** (Linn.) Vahl
 " *Scirpus arvensis* König."
 Type of *Scirpus arvensis* Retz. Obs. iv. 11
243. **Fimbristylis spathacea** Roth
 " *Scirpus glomeratus*. Kön."
 Type of *Scirpus glomeratus* Retz. Obs. iv. 11.
244. **Fimbristylis argentea** (Rottb.) Vahl
 " *Scirpus argenteus* K. *monandr. similis monandro* Rottb. ut illum esse credas"
 N.R.
245. **Fimbristylis argentea** Vahl
 " *Fimbristylis argentea* K. " and in pencil on front " *Scirpus monander* "
 N.R. Probably a duplicate of the type of *Scirpus monander* Rottb. Descr. & Ic. 50.
246. **Fimbristylis argentea** Vahl
 " *Fimbristylis argentea*. Kön."
 N.R.
247. **Fimbristylis globulosa** (Retz.) Kunth
 " *Scirpus globosus* N."
 The type, described as *Scirpus globulosus* Retz. Obs. vi. 19.
248. **Fimbristylis complanata** (Retz.) Link
 " *Scirpus complanatus* N."
 The type, described as *Scirpus complanatus* Retz. Obs. v. 14.

249. *Fimbristylis nigrobrunnea* Thw.
 " 20 *Fimbristylis diphylla*. *Scirpus diphyllus* Retz. herb."
 N.R.
250. *Fimbristylis triflora* (Linn.) K. Sch. (*F. tristachya* Thw., F.B.I.)
 " *Schoenus cyperoides*. Kön."
 Type of *Schoenus cyperoides* Retz. Obs. iv. 8, and probably a duplicate of the type sent to Linnaeus by Koenig.
251. *Bulbostylis barbata* (Rottb.) C. B. Clarke.
 " *Scirpus barbatus* "
 Possibly the basis of the remarks under *Scirpus barbatus* in Retz. Obs. vi. 20, but there is nothing to indicate connection with Koenig.
252. *Scirpus supinus* Linn.
 " *Scirpus lateralis* N."
 Type of *Scirpus lateralis* Retz. Obs. iv. 12.
253. *Scirpus grossus* Linn. f.
 " *Scirpus grossus*. Kön."
 Quoted under *S. grossus* Linn. f. Suppl. 104 in Retz. Obs. v. 15 and perhaps a duplicate of the type.
254. *Scirpus squarrosus* Linn.
 " *Scirpus squarrosus*. Kön."
 N.R. Possibly a duplicate of the type specimen and also of the specimen quoted under *S. squarrosus* in Rottb. Descr. & Ic. 50.
255. *Fuirena ciliaris* (Linn.) Roxb. (*F. glomerata* Lam., F.B.I.)
 " *Scirpus ciliaris* 5 *Fuirena Glomerata* Vahl. *Scirpus ciliaris* Rottb.
 p. 55 t. 17. f. 1.
 a *Scirpo Uncinato* vix distincta "
 Probably a duplicate of the specimen quoted under *Scirpus ciliaris* Rottb. Descr. & Ic. 55, and of the type, which is acknowledged as received from Koenig.
256. *Hypolytrum anomalum* (Retz.) Domin (*Hypolytrum latifolium* L. C. Rich., F.B.I.)
 " *Scirpus anomalus* "
 Type of *Scirpus anomalus* Retz. Obs. v. 15, but apparently not a Koenig specimen.
257. *Lepironia articulata* (Retz.) Domin (*L. mucronata* L. C. Rich., F.B.I.)
 " *Restio articulatus*. Kön."
 The type, described as *Restio articulatus* Retz. Obs. iv. 14.
258. *Diplacrum caricinum* R. Br.
 " *Carex prostrata*. Kön."
 N.R.
259. *Scleria lithosperma* (Linn.) Sw.
 " *Scleria tenuis*. Kön."
 Type of *Scleria tenuis* Retz. Obs. iv. 13.
260. *Scleria poaeformis* Retz. (*S. oryzoides* Presl, F.B.I.)
 " Cyperaceae *Scleriae* *Sclearea poaeformis* Retz. Willd. Sp. 14. Dietr. Synops. v. p. 254. No. 66.
 Ind. Orient. Kön."
 The type, described as *Scleria poaeformis* Retz. Obs. iv. 13. Vide K.B. 1931, 265.

GRAMINEAE.

261. *Digitaria puberula* Link (*Paspalum Royleanum* Nees, F.B.I.)
 " *Agrostis pilosa* N. Kön."
 Type of *Agrostis pilosa* Retz. Obs. vi. 22.
262. *Digitaria longiflora* (Retz.) Pers., det. C. E. H. (*Paspalum longiflorum* Retz., F.B.I.)
 " Mus. Achar." On front " *Coromandelia*. *P. longiflorum* "
 The type (?) described as *Paspalum longiflorum* Retz. Obs. iv. 15.
263. *Digitaria longiflora* Pers. det. C. E. H.
 " *Milium setaceum*. Kön."
 N.R.

264. *Eriochloa punctata* (Linn.) Hamilt., det. C. E. H.
" *Panicum. Milium punctatum* L. Koen."
N.R.
265. *Eriochloa procera* (Retz.) C. E. Hubbard, det. C. E. H. (*Agrostis procera* Retz. and *E. polystachya* H. B. & K., F.B.I.)
" *Agrostis procera.* Kön."
The type, described as *Agrostis procera* Retz. Obs. iv. 19. For n. comb. see Kew Bull. 1930, 256.
266. *Isachne australis* R. Br.
" *Panicum violaceum* Rottleri. Koen."
N.R.
267. *Paspalidium flavidum* (Retz.) Stapf (*Panicum flavidum* Retz., F.B.I.)
" *Panicum flavidum* N."
The type, described as *Panicum flavidum* Retz. Obs. iv. 15.
268. *Paspalidium flavidum* Stapf.
" *Panicum flavidum* S. V. Zeyl. Kön."
Possibly the basis of the remarks on *P. brizoides* at the foot of description of the last named.
269. *Paspalidium geminatum* (Forsk.) Stapf, det. C. E. H. (*Panicum paspaloides* Pers., F.B.I.) " *Panicum fluitans* N. König."
Type of *Panicum fluitans* Retz. Obs. iii. 8.
270. *Echinochloa Crus-galli* (Linn.) Beauv. (*Panicum Crus-galli* Linn., F.B.I.)
" *Panicum Crus Corvi.* König "
N.R.
271. *Echinochloa Crus-galli* Beauv., the long-awned form.
" *Panicum hispidulum* N."
Type of *Panicum hispidulum* Retz. Obs. v. 18.
272. *Echinochloa stagnina* (Retz.) Beauv. (*Panicum Crus-galli* Linn., F.B.I.)
" *Panicum stagninum* N."
The type, described as *Panicum stagninum* Retz. Obs. v. 17.
273. *Echinochloa stagnina* Beauv.
" *Panicum Crus Corvi.* P. pictum K."
N.R.
274. *Urochloa reptans* (Linn.) Stapf, det. C. E. H. (*Panicum prostratum* Beauv., F.B.I.)
" *Panicum umbrosum.* Kön."
Type of *Panicum umbrosum* Retz. Obs. iv. 16.
275. *Brachiaria remota* (Retz.) Haines, det. C. E. H. (*Panicum remotum* Retz., F.B.I.)
" *Panicum remotum.* Kön."
The type, described as *Panicum remotum* Retz. Obs. iv. 16.
276. *Sacciolepis indica* (Linn.) Chase, det. C. E. H. (*Panicum indicum* Linn., F.B.I.)
" *Panicum indicum.* König "
Quoted under *Panicum indicum* in Retz. Obs. iii, 9.
277. *Panicum miliaceum* Linn.
" *Panicum miliaceum* L. Kön."
Does not appear to have been used in the description of *Panicum miliaceum* in Retz. Obs. i. 11.
278. *Panicum psilopodium* Trin., det. C. E. H.
" *Panicum flexuosum* var. *glabra.* Kön."
Quoted under *Panicum flexuosum* in Retz. Obs. iv. 16.
279. *Panicum repens* Linn., det. C. E. H.
" *Panicum Ischaemoides* Kön."
Type of *Panicum ischaemoides* Retz. Obs. iv. 17.
280. *Panicum antidotale* Retz., det. C. E. H.
" *Panicum antidotale.* Kön."
The type described in Retz. Obs. iv. 17.

281. *Cyrtococcum radicans* (Retz.) Stapf
 " *Panicum muricatum*. Kön."
 Type of *Panicum muricatum* Retz. Obs. iv. 18, which is probably an abnormal form of *P. radicans* Retz. l.c., the type of which is not in the collection.
282. *Cyrtococcum trigonum* (Retz.) A. Camus, det. C. E. H. (*Panicum trigonum* Retz., F.B.I.)
 " *Panicum trigonum* N. König "
 The type, described as *Panicum trigonum* Retz. Obs. iii. 9.
283. *Alloteropsis cimicina* (Linn.) Stapf, det. C. E. H. (*Axonopus cimicinus* Beauv., F.B.I.)
 " *Panicum cimicinum* König. *Milium cimicinum* L."
 Quoted under *Panicum cimicinum* in Retz. Obs. iii. 9.
284. *Oplismenus compositus* (Linn.) Beauv.
 " *Panicum lanceolatum* N."
 Type of *Panicum lanceolatum* Retz. Obs. v. 17.
285. *Oplismenus Burmannii* (Retz.) Beauv., det. C. E. H.
 " *Panicum Burmanni* N. König "
 Type of *Panicum Burmanni* Retz. Obs. iii. 10.
286. *Leersia hexandra* Sw., det. C. E. H.
 " *Pharus ciliatus* N. *Panicula coarctata*, rara, polygama.
Flor. corolla destituti
Calycinæ valvulae cymbiformes compressae, ciliatae
Pedunc. simplices
Hab. ad margines stagnorum "
 Type of *Pharus ciliatus* Retz. Obs. v. 23.
287. *Trachys muricata* (Linn.) Steud., det. C. E. H. (*Trachys mucronata* Pers., F.B.I.)
 " *Panicum squarrosum*. Kön."
 Type of *Panicum squarrosum* Retz. Obs. v. 15.
288. *Zoysia matrella* (Linn.) Merr. (*Zoysia pungens* Willd., F.B.I.)
 " Mus. Achar." On front: "India orient. Koenig. M. Maritimum"
 N.R.
289. *Dimeria avenacea* (Retz.) C. E. C. Fischer, n. comb. (*D. pusilla* Thw. var. *pallida* Thw., F.B.I.)
 " *Anthoxanthum avenaceum* N. *indicum* König "
 The type, described as *Anthoxanthum avenaceum* Retz. Obs. iii. 8.
290. *Imperata cylindrica* (Linn.) Beauv. var. *Koenigii* Dur. & Schz., det. C. E. H. (*I. arundinacea* Cyr., F.B.I.)
 " *Saccharum Koenigii* N." and on front "Hb. Retz."
 Quoted under *Saccharum Koenigii* Retz. Obs. v. 16.
291. *Saccharum arundinaceum* Retz., det. C. E. H.
 " *Saccharum arundinaceum* N. *Arundo indica* König
folia fasciculata. Pee Carumbo "
 The type, described in Retz. Obs. iv. 16.
292. *Saccharum bengalense* Retz. (*S. arundinaceum* Retz. in part, F.B.I.)
 " *Arundo bengalensis* N. Kön."
 The type, described in Retz. Obs. v. 16.
293. *Pollinidium binatum* (Retz.) C. E. Hubbard, n. comb., det. C. E. H. (*Ischaemum angustifolium* Hack., F.B.I.)
 " *Andropogon binatum* N. *Agrostis villosa* Kön."
 and at foot in front "Hb. Retz."
 The type, described as *Andropogon binatum* Retz. Obs. v. 21.
294. *Ischaemum muticum* Linn.
 " *Ischaemum muticum*. Koen. "
 A poor specimen, not specifically mentioned and doubtfully used for the description in Retz. Obs. vi. 34.

295. *Apluda mutica* Linn.
 " *Andropogon glaucum* N.
Anthistiria glauca. *Triandra digyna* "
 and at foot in front " Hb. Retz."
- Type of *Andropogon glaucum* Retz. Obs. vi. 34.
296. *Manisuris Myurus* Linn. (*Rottboellia Myurus* Benth., F.B.I.)
 " *Manisuris myurus*. Kön."
 N.R.
297. *Ophiurus exaltatus* (Linn.) O. Ktze., det. C. E. H. (*Ophiurus corymbosus* Gaertn. f., F.B.I.)
 " *Rottboellia punctata* N. *exaltata* König "
 Type of *Rottboellia punctata* Retz. Obs. iii. 12.
298. *Mnesithea laevis* (Retz.) Kunth, det. C. E. H. (*Rottboellia perforata* Roxb., F.B.I.)
 " *Rottboellia laevis* "
 The type, described as *Rottboellia laevis* Retz. Obs. iii. 11.
299. *Vetiveria zizanioides* (Linn.) Nash, det. C. E. H. (*Andropogon squarrosus* Linn. f., F.B.I.)
 " *Andropogon muricatum* N. Tamulis Woetiwar. Radices ab indigenis usitatissimae ob odorem gratum dum eum aliquantulo aquae fort. irroretur. Ex his flabella praeprimis* parantur & cum pennis Pavonum ad marginem ornantur König "
 Type of *Andropogon muricatum* Retz. Obs. iii. 43. *In the text in Retz. Obs. this word appears as " praecipue."
300. *Vetiveria zizanioides* Nash, det. C. E. H.
 " *Andropogon muricatum* N. *squarrosus* L. König "
 Probably a duplicate of the type of *Andropogon squarrosus* Linn. f. Suppl. 4. 33 which was supplied by Koenig.
301. *Dichanthium caricosum* (Linn.) Camus, det. C. E. H. (*Andropogon caricosus* Linn., F.B.I.)
 " *Andropogon serratum* N. *Holcus setaceus* Kön."
 Type of *Andropogon serratum* Retz. Obs. v. 21.
302. *Aristida setacea* Retz., det. C. E. H.
 " *Aristida arundinacea*. Kön."
 The type, described in Retz. Obs. iv. 22.
303. *Aristida hystrix* Linn. f., det. C. E. H.
 " *Aristida squarrosa* K. *Hystrix* L."
 Probably a duplicate of the specimen described in Linn. f. Suppl. 113, Koenig being acknowledged as the finder.
304. *Sporobolus diander* (Retz.) Beauv., det. C. E. H.
 " *Cinna diandra* N."
 The type, described as *Agrostis diandra* Retz. v. 19.
305. *Sporobolus tremulus* (Willd.) Kunth, det. C. E. H.
 " *Agrostis Matrella*. Kön."
 N.R.
306. *Sporobolus coromandelianus* (Retz.) Kunth, det. C. E. H.
 " *Agrostis coromandeliana*. Kön."
 The type, described as *Agrostis coromandeliana* Retz. Obs. iv. 19.
307. *Cynodon dactylon* (Linn.) Pers., det. C. E. H.
 " *Agrostis linearis*. *Panicum Dactylon* L. ex sententia Lambert Transact. Linn. v. 7. p. 309. Kön."
 Type of *Agrostis linearis* Retz. Obs. iv. 19.
308. *Cynodon dactylon* Pers., det. C. E. H.
 " *Panicum lineare*. Koenig "
 Quoted under *Panicum lineare* Retz. Obs. iii. 10.
309. *Eleusine indica* (Linn.) Gaertn., det. C. E. H.
 " *Cynosurus indicus*. Kön."
 N.R.

310. *Eleusine indica* Gaertn., det. C. E. H.
"Panicum. Kön."
N.R.
311. *Eleusine coracana* (Linn.) Gaertn., det. C. E. H.
"Cynosurus coracanus. Kön."
N.R.
312. *Leptochloa filiformis* (Pers.) Roem. & Sch.
"Poa chinensis. K."
N.R. under *Poa chinensis* Retz. Obs. iii. 11 & v. 19.
313. *Leptochloa chinensis* (Linn.) Nees
"Poa malabarica. Kön."
Type of *Poa malabarica* Retz. Obs. v. 19, non Linn.
314. *Arundox Donax* Linn., det. C. E. H.
"Arundo bifaria. Kön."
Type of *Arundo bifaria* Retz. Obs. iv. 21.
315. **Phragmites karka** (Retz.) Trin., det. C. E. H.
"Arundo karka König Panic. secunda nutans"
The type, described as *Arundo karka* Retz. Obs. iv. 21.
316. *Eragrostis ciliaris* (Sw.) Link
"Poa amboinica. Kön."
Quoted under *Poa amboinica* L. in Retz. Obs. iv. 20.
317. *Eragrostis tenella* (Linn.) R. & S., det. C. E. H.
"Poa ciliaris. Kön."
N.R.
318. *Eragrostis tenella* R. & S., det. C. E. H.
"Poa plumosa. Kön."
Type of *Poa plumosa* Retz. Obs. iv. 20.
319. **Eragrostis viscosa** (Retz.) Trin., det. C. E. H. (*E. tenella* R. & S.
var. *viscosa* Stapf, F.B.I.)
"Poa viscosa. Kön."
The type, described as *Poa viscosa* Retz. Obs. iv. 20.
320. *Eragrostis japonica* (Thunb.) Trin., det. C. E. H. (*Eragrostis interrupta*
Beauv., F.B.I.)
"Poa biflora N."
Type of *Poa biflora* Retz. Obs. v. 19.
321. **Eragrostis unioloides** (Retz.) Nees, det. C. E. H. (*E. amabilis* W.
& A., F.B.I.)
"Poa unioloides N."
The type, described as *Poa unioloides* Retz. Obs. v. 19.
322. **Eragrostis nutans** (Retz.) Nees, det. C. E. H. (*E. stenophylla* Hochst.,
F.B.I.)
"Poa nutans. Kön."
The type, described as *Poa nutans* Retz. Obs. iv. 19.
323. *Eragrostis cilianensis* (All.) Link (*E. major* Host., F.B.I.)
"Poa amabilis König. Similis Eragrostidi sed axillae pedunculorum
nigro notatae"
N.R.
324. *Eragrostis minor* Host
"Poa Eragrostis Kön."
N.R.
325. *Eragrostis pilosa* (Linn.) Beauv., det. C. E. H.
"Poa amabilis Kön."
N.R.
326. *Desmostachya bipinnata* (Linn.) Stapf, det. C. E. H. (*Eragrostis*
cynosuroides Beauv., F.B.I.)
"Poa cynosuroides. Kön."
Type of *Poa cynosuroides* Retz. Obs. iv. 20.
327. *Diplachne fusca* (Linn.) Beauv., det. C. E. H.
"Festuca indica. Kön."
Type of *Festuca indica* Retz. Obs. iv. 21.

328. *Diplachne fusca* Beauv., det. C. E. H.
 " *Poa contracta* N. König."
 Type of *Poa contracta* Retz. Obs. iii. 11.
329. ?
 " *Panicum dimidiatum* Retz. Obs. 6. pag. 23, et Willd. Sp. Pl. 1. p. 339.
 19. Linn. System. verum.

Patria : India."

There is nothing to connect this sheet with Koenig. I have not been able to determine it. It appears to be abnormal, the inflorescence is defective. It is not *Panicum dimidiatum* as described in Retz. Obs. vi. 23.

PTERIDOPHYTA.

330. *Dryopteris* cf. *papilio* (Hope) C. Chr.
 " *Polypodium*. Kön."
 N.R.
331. *Dryopteris prolifera* (Retz.) C. Chr.
 On attached label " *Polypodium proliferum* Kön."
 The type, described as *Hemionitis prolifera* Retz. Obs. vi. 38.
332. *Aspidium pteroides* (Retz.) Ballard n. comb.
 " *Polypodium marginale*. Kön."
 The type, described as *Polypodium pteroides* Retz. Obs. vi. 39.
 Retz. type of his *Polypodium pteroides* is evidently an *Aspidium*, section *Pleocnemia*, and the name *Aspidium pteroides* (Retz.) Ballard is therefore proposed for it. The *Dryopteris* generally known as "*Dryopteris pteroides* (Retz.) O. Ktze." thus requires a new name, and Swartz's epithet *obtusatum* must be adopted. The species therefore becomes *Dryopteris obtusata* (Sw., *Aspidium*) Ballard, n. comb.—F.B.
333. *Quercifilix zeylanicus* (Houtt.) Copeland
 " *Onoclea quercifolia* Willd. *Acrostichum quercifolium* Willd.
Osmunda trifida Jacq. Coll. 3. p. 281. t. 20.
 f. 3. Kön."
- Specimen quoted under *Acrostichum quercifolium* Retz. Obs. vi. 39.
334. *Diplazium esculentum* (Retz.) Sw.
 " *Asplenium esculentum*. *Hemionitis* Kön."
 The type, described as *Hemionitis esculenta* Retz. Obs. vi. 38.
335. *Asplenium adiantoides* (Linn.) C. Chr.
 " *Asplenium falcatum* N. Trichomanes adianth. L. Kön."
 Type of *Asplenium falcatum* Retz. Obs. vi. 37, non Lam.
336. *Asplenium nidus* Linn.
 " *Asplenium nidus*. Kön."
 N.R.
337. *Cheilanthes tenuifolia* (Burm.) Sw.
 " *Cheilanthes microphylla* ? *Acrostichum tenue* Kön.
Rumph. T. vi. p. 77. t. 34. f. 2. Dryopteris
campestris
Hab. in nemorosis Siam. Midnapour,
Tschandrancona ad sepulcra sinensium
Malaccae."
- Type of *Acrostichum tenue* Retz. Obs. vi. 39.
338. *Adiantum caudatum* Linn.
 " *Adiantum caudatum* W. Kön."
 N.R.
339. *Pteris quadriaurita* Retz.
 " *Pteris quadriaurita*. Kön."
 The type of the species, described in Retz. Obs. vi. 38.
340. *Pteris vittata* Linn.
 " *Pteris vittata*. Kön."
 N.R.
341. *Ophioglossum parvifolium* Hook. & Grev.
 " *Ophioglossum (indicum) nudicaule*. Kön."
 N.R.

342. *Ophioglossum pendulum* Linn.
"Ophioglossum pendulum. Koen."
N.R.
343. *Azolla pinnata* R. Br.
"Azolla. Lemna deltoidea Koen."
N.R.
344. *Marsilea minuta* Linn.
"Marsilea minuta. Kön."
N.R.
345. *Selaginella ciliaris* (Retz.) Spring
"Lycopodium ciliare. Kön."
The type, described as *Lycopodium ciliare* Retz. Obs. v. 32.
346. *Isoëtes coromandelina* Linn. f.
"Isoëtes coromandeliana L., indica Kön.
Folia stricta, erecta, basi subvaginantia,
triquetra, laevia.
Hab. in humidiusculis solo arenoso."
N.R. Probably a duplicate of the type which Linn. f. received from Koenig.

SPECIES MENTIONED IN RETZ. OBS. BUT NOT FOUND IN COLLECTION.

| Name and page in Retz. Obs. | | Probable correct name. | |
|-----------------------------|-------------------------|------------------------|--|
| 1 | Menispermum Cocculus | vi. 34 | Anamirta Cocculus W. & A. |
| 2 | Capparis horrida | v. 4 | Capparis horrida Linn. f. |
| 3 | Mangifera pinnata | v. 4 | Spondias Mangifera Willd. |
| 4 | Aeschynomene cannabina | v. 26 | Sesbania aculeata Pers. var. cannabina Bak. |
| 5 | Zinnia bidens | v. 28 | Glossogyne pinnatifida DC. |
| 6 | Diospyros Ebenaster | v. 31 | Diospyros glaberrima Linn. f. |
| 7 | Diospyros Ebenum | v. 31 | Diospyros Ebenum Linn. f. |
| 8 | Myrtus laurinus | iv. 26 | Symplocos spicata Roxb. |
| 9 | Vinca parviflora | ii. 14 | Vinca pusilla Murr. |
| 10 | Cynanchum cordifolia | ii. 15 | Daemia extensa R. Br. |
| 11 | Periploca emetica | ii. 14 | Secamone emetica R. Br. |
| 12 | Strychnos colubrina | ii. 12 | Strychnos colubrina Linn. |
| 13 | Justicia parviflora | v. 9 | Rungia parviflora Nees |
| 14 | Achyranthes echinata | ii. 12 | Pupalia lappacea Miq. |
| 15 | Celosia polygonoides | ii. 12 | Celosia polygonoides Retz. |
| 16 | Celosia margaritacea | ii. 27 | Celosia cristata Linn. |
| 17 | Celosia comosa | vi. 26 | Celosia argentea Linn. |
| 18 | Celosia baccata | v. 23 | Deeringia celosioides R. Br. |
| 19 | Celosia Monsonia | ii. 13 | Aerva Monsonia Mart. |
| 20 | Nepenthes distillatoria | v. 7 | Nepenthes distillatoria Linn. |
| 21 | Cyperus Luzulae | iv. 11 | Cyperus sp. |
| 22 | Scirpus pilosus | vi. 19 | Fuirena glomerata Lam. |
| 23 | Scirpus caribaeus | iv. 12 | ? |
| 24 | Aegilops muricata | ii. 27 | Eremochloa muricata Hack. |
| 25 | Aristida depressa | iv. 22 | Aristida adscensionis Linn. |
| 26 | Arundo bengalensis | v. 20 | Arundo Donax Linn. |
| 27 | Andropogon incurvatum | v. 21 | Dichanthium caricosum Stapf vel Lophopogon sp. |
| 28 | Milium ramosum | vi. 22 | Eriochloa procera C. E. Hubbard. |
| 29 | Panicum setigerum | iv. 15 | Urochloa setigera Stapf. |
| 30 | Bambos arundinacea | v. 30 | Bambusa arundinacea Willd. |
| 31 | Embelia Burmanni | iv. 23 | ? |
| 32 | Clavaria bifida | v. 32 | ? |
| 33 | Fucus zeylanicus | vi. 40 | ? |

VIII.—NEW SPECIES OF NOTOTRICHE FROM BOLIVIA. ARTHUR W. HILL.

Dr. Erik Asplund, during his expedition to the Andes of Bolivia ten years ago, made a very interesting collection of several species of *Nototriche*, which he has kindly sent to me for determination. Four of them prove to be undescribed species and the descriptions are appended; there are also two well-marked varietal forms of species I have previously described* which appear worthy of being given a varietal name.

Careful examination of Dr. Asplund's specimens has revealed the fact that at the base of the calyx there are always five nectaries, composed of short papillae forming circular patches round about the vascular bundles running to the apex of each of the calyx lobes. These nectaries had previously been noticed and figured only in *N. obtusa* and *N. congesta* (2), but probably they are to be found in almost all the species.

The play on leaf form exhibited by this genus, as mentioned in the paper presented to the Linnean Society, is very remarkable. Among the species collected by Dr. Asplund two with much dissected leaves are worthy of notice. In both, the laminae of the small leaves, often not more than 6 mm. broad, are divided up into 9 to 11 lobes and these each bear 1 to 3 pairs of lobuli.

In some of the species, such as *N. ulophylla*, *N. obcuneata* and *N. pulvilla* (see figs. in Trans. Linn. Soc. vii.), the lateral lobuli are short and are bent over at right-angles to the main lobe on which they are borne, while in others, such as *N. turritella* and *N. pedatiloba*, the lobuli are as long as the lobes and, like them, are vertical and finger-like, and are closely webbed together by the stellate hairs, which may cover both their upper and lower surfaces. In several species, especially in the four new species described below, the lobes and lobuli are somewhat fleshy and the lobuli are erect and arranged like fingers closely pressed together, while in other species, such as *N. parviflora* and *N. dissecta*, the lobes and lobuli are herbaceous, thin and more elongated. The carpels are evidently of considerable value for distinguishing between the closely-allied species, since the length of the beak and the nature of the hairs afford useful diagnostic characters. It is unfortunate that in several cases no mature fruits have been collected. The character of the indumentum on the lamina and elsewhere is important and very

* (1) Note on the genus *Nototriche* Turcz., with an amended diagnosis and descriptions of new species. A. W. Hill in Engl. Bot. Jahrb., xxxvii, Heft. 4, 1906, pp. 575-587.

(2) A revision of the genus *Nototriche* Turcz. A. W. Hill in Trans. Linn. Soc. London, Ser. ii., vii, part 12, July 1909, pp. 201-266, with plates 27-30.

(3) *Nototriche holoserica* A. W. Hill in Kew Bull. 1927, p. 248.

(4) New species of *Nototriche* from Chile with notes on *Malvastrum*. A. W. Hill in Kew Bull. 1928, pp. 17-21, with text figs.

See also Malvaceae by E. Ulbrich in Beit. zur Flora von Bolivia in Engl. Bot. Jahrb. Sonderabdruck aus Band 49 Heft. 1. (1912) p. 208.

difficult to describe. In all cases the hairs are stellate ; sometimes the arms of the hairs are long and silky, while in other cases they are so short that the tomentum resembles a fine plush-like felt. The type of hair is characteristic for each species and under a high magnification it would no doubt be possible to draw up a series of different forms characteristic for the respective species to which they belong.

A list of the other species of *Nototriche* collected by Dr. Asplund is appended at the end of this account.

Nototriche leucosphaera A. W. Hill ; species *N. Azorella* A. W. Hill, *N. congestae* A. W. Hill et *N. turritella* A. W. Hill affinis, ab illis staminum columna quam corolla brevior, ab hac pulvillis minoribus, foliorum lobulis paucioribus praecipue differt.

Fruticulus caespitosus ; pulvilli ramosi, dense albo-tomentosi, 4-6 cm. diametro ; caudex subterraneus, lignosus, ramosus. *Folia* arcte aggregata ; petiolus 4.5-6 mm. longus ; stipulae petiolo adnatae et cum eo quasi vaginam membranaceam circiter 2 mm. latam formantes, parte libera membranacea lanceolata subacuta 2 mm. longa uti vagina utrinque glabra marginibus stellato-hirsuta ; lamina ambitu semicircularis, 2.5 mm. longa, 4.5-5 mm. lata, circiter 7-fida, supra dense albo-stellato-pubescent, infra sparse pubescens, lobis 1.75 mm. longis iterum lobulatis, lobulis obovatis obtusis, cunctis 17-21 sursum spectantibus ut digitis compressis fasciatim dispositis. *Flores* prope medium petiolum siti. *Calyx* campanulatus, 4-4.5 mm. longus ; tubus extra paullum hirsutus, intus glaber, basi nectariis 5 papillosis instructus ; lobi 2 mm. longi, dense stellato-pubescentes. *Corolla* albo-violacea, 8-9 mm. longa ; petala obovata, basi in tubum 2 mm. longum coalita. *Siamina* in caput compactum aggregata, quam petala breviora. *Carpella* immatura 1-1.5 mm. longa, minute birostrata, dense hirsuta.

BOLIVIA. Dep. La Paz : Prov. Pacajes ; station General Campero, 4000 m., *E. Asplund* 2782 (type), 2783 (5.iii.1921).

Nototriche coactilis A. W. Hill ; species *N. Orbignyanae* A. W. Hill affinis, sed lobis et lobulis laminae brevioribus arcte aggregatis haud laciniatis, calycis segmentis brevioribus, corolla minore differt.

Fruticulus caespitosus, pulvinatus ; pulvini circiter 6 cm. diametro ; caudex subterraneus, crassus, lignosus. *Folia* dense congesta, cinerea ; petiolus 2 cm. longus ; stipulae petiolo ultra medium adnatae et cum eo quasi vaginam 3 mm. latam carnosulam formantes, utrinque et marginibus pilis longe stellatis instructae, parte libera lineari-obtusata 8 mm. longa, facie in apice et dorso longe hirsuta ; lamina ambitu subrotunda, 7-8 mm. longa, 1-1.5 cm. lata, utrinque dense stellato-tomentosa, circiter 9-fida, lobis obovatis obtusis 5.5 mm. longis, singulis 3-5-lobulatis, lobulis obovatis erectis conjuncte compressis quam lobis brevioribus. *Flores* prope apicem vaginae siti. *Calyx* supra medium 5-lobus, 7-9 mm. longus, extra ubique stellato-tomentosus, intus basi nectariis 5 papillosis

instructus; lobi 3-4 mm. longi, triangulari-subacuti. *Corolla* 7.5-9 mm. longa; petala obovata, retusa, basi in tubum 2.5 mm. longum coalita. *Carpella* (fere matura) 4-4.5 mm. longa, birostrata, rostris 1.5 mm. longis, dorso stellato-pilosa.

BOLIVIA. Dep. Oruro: Prov. Abaroa; Challapata, 4700 m., *E. Asplund* 3347 (I.iv.1921).

Nototriche nivea A. W. Hill; species *N. pedatilobae* A. W. Hill affinis, sed vagina angustiore, lamina et calyce ubique pubescentibus praecipue differt.

Fruticulus caespitosus; pulvilli incani; caudex lignosus. *Folia* arcte aggregata, incano-niveo-pubescentia; petiolus 8-9 mm. longus; supra vaginam ubique pubescens; stipulae glabrae, petiolo ultra medium adnatae, et cum eo quasi vaginam membranaceam 3 mm. latam formantes, parte libera membranacea oblonga obtusa vel truncata 5 mm. longa 2 mm. lata, vagina et stipulis dorso et marginibus pilis stellatis minutis dense instructis, vagina supra prope basin leviter pubescente; lamina ambitu semicircularis, flabellatim 9-10-fida, 3-4 mm. longa, 7-8 mm. lata, ubique dense incano-stellato-pubescens, segmentis 2.5 mm. longis, lobis et lobulis obovatis obtusis in fasciculos compressis digitiformibus sursum porrectis ope pilorum colligatis. *Flores* petiolo prope basin insidentes. *Calyx* campanulatus, 9 mm. longus, extra ubique incano-pubescens, intus basi nectariis 5 papillosis instructus; lobi triangulari-subacuti, 2.5 mm. longi. *Corolla* albo-violacea, 1.3-1.4 cm. longa; petala obovata, emarginata, basi in tubum 5 mm. longum coalita. *Carpella* 4.5 mm. longa, birostrata, dorso longe stellato-tomentosa, rostris 1.75 mm. longis.

BOLIVIA. Dep. Oruro: Prov. Carangas; Sajama, 4500 m., *E. Asplund* 3965 (II.v.1921).

Nototriche violacea A. W. Hill; species *N. sajamensi* A. W. Hill affinis, sed foliis dorso hirsutis, lobulis subcarnosulis aequilongis, calyce brevior, petalis obovatis obtusis praecipue differt.

Fruticulus caespitosus, pulvinatus; pulvini 2-3 cm. diametro, incani; caudex subterraneus, lignosus, ramosus. *Folia* congesta, apice ramorum rosulata; petiolus circiter 9 mm. longus; stipulae ultra medium petiolum adnatae et cum eo quasi vaginam membranaceam 7 mm. longam 3 mm. latam formantes, parte libera membranacea lineari-lanceolata acuta 4.5 mm. longa, 1.25 mm. lata uti vagina utrinque glabra, marginibus pilis paucis longe stellatis instructis; lamina ambitu semicircularis, 4 mm. longa, 6 mm. lata, 9-lobata, utrinque pilis longe stellatis instructa apicibus loborum et lobulorum glabris exceptis; lobi et lobuli digitiformes, anguste obovati, obtusi, subcarnosuli; lobi singuli lobulis 2 lobos aequantibus circiter 2.5 mm. longis instructi, ope pilorum intertextorum colligati. *Flores* prope apicem vaginae siti. *Calyx* 6 mm. longus; tubus glaber, basi nectariis 5 instructus; lobi 3 mm. longi, triangulari-acuti, extra et marginibus pilis longe stellatis instructi. *Corolla*

violacea, 1.1 cm. longa ; petala late obovata, basi in tubum 2.5 mm. longum coalita. *Carpella* (immatura) 1.5 mm. longa, vix rostrata, dorso pilis sericeis 2 mm. longis instructa.

BOLIVIA. Dep. La Paz : Prov. Ingavi, Guaqui, hills south of the railway, 4400 m., *E. Asplund* 2373 (4.ii.1921).

Nototriche obcuneata A. W. Hill, var. ***cinerea*** A. W. Hill, var. nov. ; a typo differt pilis stellatis aliquanto majoribus, etiam in pagina inferiore foliorum praesentibus, corolla minore (circiter 1.6 cm. tantum longa). Tota planta ob tomentum densum pilorum longe stellatorum cinerea.

BOLIVIA. Dept. Oruro : Prov. Carangas ; Sajama, 4800 m., *E. Asplund* 3898, type (10.v.1921). Dep. La Paz : Prov. Ingavi ; Miriquiri, 4820 m., *E. Asplund* 2868 (10.iii.1921).

Nototriche anthemidifolia A. W. Hill, var. ***sericea*** A. W. Hill, var. nov. ; foliorum tomento subtiliore, lamina aliquanto brevior et latiore, subtus tomento griseo et pilis longis sericeis induta, segmentis angustioribus brevioribus a typo praecipue differt. Ut in typo, nectaria 5 basi calycis adsunt.

BOLIVIA. Dep. Oruro : Prov. Carangas ; Sajama, 4500 m., *E. Asplund* 3881 (10.v.1921).

OTHER SPECIES OF NOTOTRICHE FROM BOLIVIA COLLECTED BY
DR. ASPLUND.

The specimens are preserved at Uppsala and Stockholm, and in nearly every case duplicates have been very kindly presented to Kew.

Nototriche acuminata A. W. Hill. Dep. La Paz : Prov. Pacajes ; near Corocoro, 4300 m., No. 3992 ; 4400 m., No. 4463.

N. anthemidifolia A. W. Hill. Prov. Pacajes ; Charaña, 4050 m., No. 2662 ; Dep. Oruro : Prov. Abaroa ; Challapata, 4500 m., No. 3315.

N. argylloides A. W. Hill. Prov. Pacajes ; Charaña, 4050 m. No. 2694.

N. flabellata A. W. Hill. Dep. La Paz : Prov. Murillo ; Incachaca, 4500 m., No. 3426.

N. longirostris A. W. Hill. Incachaca, 4200 m., No. 1891.

N. obcuneata A. W. Hill. Prov. Murillo ; Pampa Tholoco, 4500 m., No. 1976 ; La Cumbre, 4700 m., No. 3848.

N. aff. obcuneata A. W. Hill. Prov. Abaroa ; Challapata, 4700 m., No. 3333.

N. pedicularifolia A. W. Hill. Dep. Oruro : Prov. Carangas ; Sajama, 4200 m., No. 3989.

N. purpurascens A. W. Hill. Prov. Murillo ; Pampa Tholoco, 4500 m., No. 1942 ; Prov. Pacajes ; near Corocoro, 4500 m., No. 2471.

N. sajamensis A. W. Hill. Prov. Carangas ; Sajama, 4500 m., No. 4462.

IX.—CONTRIBUTIONS TO THE FLORA OF TROPICAL AMERICA: X.* T. A. SPRAGUE AND N. Y. SANDWITH.

NEW AND NOTEWORTHY BIGNONIACEAE FROM BRITISH GUIANA,
MAINLY COLLECTED BY THE OXFORD UNIVERSITY EXPEDITION,
1929.

The identification of Bignoniaceae from tropical America is attended with unusual difficulties. Without a special knowledge of the group, the most experienced taxonomist will often fail to name correctly even the genus to which a particular plant belongs, unless both flowers and fruit are represented in the material. The latest complete account of the family is that given by A. P. De Candolle in 1845 (DC. Prodr. ix. 142-248), which naturally is now quite out of date. One species, now known as *Paragonia pyramidata* (Rich.) Bur., actually appeared in the Prodomus as seven separate species, assigned to three different genera. Altogether, *P. pyramidata* now has fourteen synonyms, and has been referred to seven separate genera (vide Hook. Ic. Pl. t. 2771).

In 1863, Seemann (Journ. Bot. 1863, i. 18, 87, 225, 257) undertook a revision of the Bignoniaceae, but never completed it, probably owing to the appearance of another work on the same subject. This was Bureau's Monographie des Bignoniacées (1864), of which only the general part and the Atlas appeared. Bureau, who evidently had a very extensive knowledge of the group, subsequently published revisions of the genera *Tynnanthus* and *Lundia*, a paper on the value of anatomical characters in the family, and an account of the Bignoniaceae of central Brazil, but he unfortunately never gave any revision of the family as a whole.

Bentham (Benth. et Hook. f. Gen. Pl. ii. 1027 : 1876) recognised 53 genera of Bignoniaceae. Most of these are well defined, but under the name *Bignonia* he included a large number of genera all belonging to the tribe Bignonieae, but otherwise of the most diverse affinities. His genus *Tecoma* also included numerous genera now recognised as distinct. This defect was remedied by Baillon (Hist. Pl. x. 1-58 : 1891), who gave a valuable general account of the family with technical descriptions of 97 genera. This furnished the basis for K. Schumann's systematic arrangement of the genera, which is much easier to use, being accompanied by an analytical key. Schumann recognised 100 genera, only three more than Baillon (Engl. & Prantl, Nat. Pflanzenfam. iv. 3b, 213-250 : 1894).

The account of the Bignoniaceae given by Schumann in Martius, Flora Brasiliensis, vol. viii. pars 2 (1896-97) is the most comprehensive modern revision of the American species. It is mainly confined, however, to those of Brazil and Guiana, and its value is greatly impaired by the fact that type-specimens in the Paris Herbarium and that of De Candolle were not seen by Schumann. Apart from these limitations it is a valuable piece of pioneer work,

*Continued from *K.B.* 1932, p. 28.

and is indispensable to the student of tropical American Bignoniaceae. The treatment of the Guiana species is not altogether satisfactory, many of them having been described from inadequate material, and some having been assigned to the wrong genera, with the result that they could not be identified without examination of the type material. Thus *Tanaecium ovatum* Bur. et K. Schum. and *Memora consanguinea* Bur. et K. Schum., both described in Flora Brasiliensis, now prove to be one and the same species of *Memora*. The assignment of species to *Pithecoctenium* and "*Distictis*" (*Distictella*) is unsatisfactory, owing to neglect of anatomical characters actually given in the introduction. All these circumstances combine to make the description of new American species of Bignoniaceae a venturesome proceeding. We may mention that, as the result of examination of types in various Herbaria, only one out of four supposed new species survives in the present paper.

Two new genera, *Pseudopaegma* and *Roentgenia*, proposed by Urban (Ber. Deutsch. Bot. Ges. xxxiv. 739, 747 : 1916), are here accepted, and *Pachyptera* DC. is restored to generic rank. *Anemopaegma microcalyx* may eventually have to be removed from *Anemopaegma*, which at present includes several rather different morphological types.

Many of the difficulties connected with the classification of the British Guiana Bignoniaceae are dealt with below, and it should soon be possible to supply a complete descriptive account of the species hitherto recorded from the Colony.

The preparation of the present paper has been rendered possible only by the generous loan of type material from the Herbaria at Berlin, Brussels and Göttingen.

Arrabidaea candicans (Rich.) DC. in DC. Prodr. ix. 185 (1845).—*Bignonia candicans* Rich. in Act. Soc. Hist. Nat. Paris, 1792, 110.

Essequibo River : Moraballi Creek, fl. Sept., *Sandwith* 325. Bush-rope in wallaba forest, to which it appeared to be confined ; leaflets white beneath ; corolla reddish-mauve.

Distr. Northern South America.

Adenocalymma inundatum Mart. ex DC. in DC. Prodr. ix. 201 (1845), var. **surinamense** Bur. et K. Schum. in Mart. Fl. Bras. viii. pars 2, 94 (1896).

Essequibo River ; Moraballi Creek, fl. Nov., *Sandwith* 607. A bush-rope in mixed forest, with bright yellow flowers. Other collections from the Colony are *Jenman* 1154 and 5284 (Essequibo River), *Jenman* 691 (Mazaruni River), *Jenman* 3966 (Canje River), *Jenman* 75 (Corentyne River) and *im Thurn* (Cabalebo River).

The following specimens have been seen from Surinam : Marawyne, *Wullschlaegel* 11 (typus in Herb. Brux.) ; Para, *Wullschlaegel* 1513 (Herb. Brux.) ; banks of the Surinam River, *Kegel* 1195 (Herb. Goetting.) ; banks of River Cassepoerekreek, *Kegel* 1167 (Herb. Goetting.).

Martius' type specimen of the species has not been seen. He described the corolla as glabrous, and Bureau and K. Schumann wrote " corolla extus glabra " ; but the flowers of the Guiana variety have a very distinct indumentum on the outer surface.

Pachyptera foveolata DC. in DC. Prodr. ix. 175 (1845) ; Bur. Monogr. Bignon., Atlas, 6, t. 4 (1864), forma calyce brevior, ore recto truncato vel subtruncato, ovulis paucioribus recedens. Descriptio ex speciminibus in Guiana Britannica lectis confecta.

Frutex scandens ; ramuli annotini subteretes, circiter 4 mm. diametro, conspicue costati, glabrati, sub nodis glandulis numerosis patelliformibus in foveolis suberoso-marginatis insigniter immersis ornati, hornotini compressi, 2·5-3·5 mm. lati, faciebus medio excavatis, puberuli. *Folia* 3-foliolata ; petiolus 3·5-5 cm. longus, indumento ramulorum, supra applanatus vel late excavatus, apice in facie superiore sub junctione petiolulorum glandulis numerosis immersis eis ramulorum similibus ornatus ; petioluli indumento simili, terminalis 2·6-4·2 cm. longus, laterales 1·2-1·5 cm. longi ; foliola subaequalia, ovata, apice longe acutissime acuminata, basi leviter cordata, 14-18 cm. longa, 7-9·5 cm. lata, chartacea, supra subopaca, costa minutissime puberula excepta glabra, subtilissime sed haud conspicue reticulata, subtus costa nervisque lateralibus similiter indutis exceptis glabra sed glandulis patelliformibus hic illic praecipue in areis inter nervos laterales conspersa, necnon satis copiose minute impresso-punctata, similiter vel paullo laxius reticulata ; nervi laterales utrinque 8-10, patulo-ascendentes, satis longe a margine anastomosantes. *Inflorescentiae* ramulos axillares annotinos 2-4 cm. longos defoliatos vel ramulos hornotinos foliatis terminantes, simpliciter racemosae, pauciflorae, dense puberulae ; rhachis 0·6-1 cm. longa, consociebus glandularum notata ; bractee basales 5 mm. longae, apice trifidae, ceterae subulato-lanceolatae, ad 1·5 mm. longae ; pedicelli 5-8 mm. longi, bracteolis minutis. *Calyx* anguste campanulatus, 7·5 mm. longus, ore truncato minute denticulato 5-6 mm. diametro, extra minutissime puberulus et juxta medium glandulis longitudinaliter seriatis patelliformibus immersis ornatus. *Corolla* lactea, anguste infundibularis, 6·5 cm. longa, tubo usque circiter 2·5 cm. supra basin cylindrico, deinde ampliato et sub lobis (applanato) ad 1·2 cm. lato, extra basi excepta minute puberulo, limbo 2·7 cm. lato ; lobi obovato-oblongi, apice plus minusve rotundati usque truncato-emarginati, 8-10 mm. longi, 8-9 mm. lati, utrinque papilloso-puberuli, extra etiam inferne serie singula utroque latere venae mediae glandularum patelliformium notati. *Stamina* circiter 3 cm. supra basin corollae tubi inserta, anteriora (longiora) 2 cm., lateralia (breviora) 1·5 cm. longa ; filamentorum partes corollae tubo adnatae infra insertionem circiter per 1·3 cm. pilis albis nigro-capitatis dense villosae, praecipue inferne ; antherarum thecae sursum semicirculariter inflexae semicirculo 2 mm. diametro, densissime longe albo-villosae. *Staminodium* haud visum sed ut videtur 2 mm. infra insertionem staminum insertum.

Discus pulvinaris, 1.5 mm. altus. *Ovarium* compressum, valde 4-costatum costis medianis et lateralibus, ambitu elliptico-oblongum, 3 mm. longum, dense acute ferrugineo-papillatum; stylus circiter 4.3 cm. longus. *Ovula* 13 pro loculo, 2-seriata seriebus singulis 6-7-ovulatis.—*Adenocalymma foveolatum* K. Schum. in Engl. & Prantl, Pflanzenfam. iv. 3b, 214 (1894); Bur. et K. Schum. in Mart. Fl. Bras. viii. pars 2, 109 (1896); Urb. in Ber. Deutsch. Bot. Ges. xxxiv. 738 (1916); Standley in Contrib. U.S. Nat. Herb. xxvii. 340 (1928). *Bignonia cherere* Aubl. Hist. Pl. Guiane, t. 260?, non descr. *Adenocalymma stridula* Miers in Ann. & Mag. Nat. Hist. ser. 3, vii. 392 (1861), *quoad specimen* in Mus. Brit. *A. brachybotrys* DC. in DC. Prodr. ix. 202 (1845).

BRITISH GUIANA. Essequibo River, Moraballi Creek, fl. Nov., *Sandwith* 617. Climber among low trees on creek bank. Corolla milk-white. Anthers whitish-woolly.

An extremely interesting species morphologically, characterised by groups of sunk plate-shaped glands not only on the flattened sides of the nodes, where similar groups of glands frequently occur in species of *Adenocalymma*, *Saldanhaea* and *Cuspidaria*, but also on the upper surface of the petiole at its apex, as was noted by De Candolle (l.c.), and on the exterior of the corolla-lobes. *P. foveolata* differs from all known species of *Adenocalymma* in having densely villous anthers, a character shared with all the species of *Lundia*, and shown to a lesser extent by *Cuspidaria pterocarpa* (Cham.) DC.

The genus *Pachyptera* DC. in DC. Prodr. ix. 175 (1845) was based on two new species, *P. puberula* DC. (*Bignonia pachyptera* DC. in Ann. Sc. Nat. sér. 2, xi. 286: 1839, nomen) and *P. foveolata* DC.; the generic characters were mainly derived from the capsule and seeds, which were unknown in the remaining four species assigned to *Pachyptera* by De Candolle. The "historic" type of *Pachyptera* is *P. puberula*, which was mentioned without description by De Candolle in 1839 under the name *Bignonia pachyptera*, as representing the second of six groups of species which he considered should be separated from the genus *Bignonia*. De Candolle's generic description of *Pachyptera*, however, was evidently based mainly on *P. foveolata* since it mentions that the marginal nerves of the capsule separate from the valves and septum, forming a replum, and that the seeds are inserted at the sides of the septum, characters taken from *P. foveolata*. Hence that species should be accepted as the type of the generic name *Pachyptera*.

Schumann transferred *P. foveolata* to the genus *Adenocalymma* in 1894, and two years later treated *Pachyptera* as a section of *Adenocalymma* distinguished by its villous anthers, and the groups of plate-shaped glands outside the corolla-lobes. In 1916 Urban (l.c.) pointed out that the pollen of *A. foveolatum* differed from that of *Adenocalymma* in being 3-grooved. We have therefore no hesitation in accepting *Pachyptera* as an independent genus. We were at first inclined to treat the British Guiana material as representing a

separate species, distinguished by the considerably shorter symmetrically truncate calyx and the smaller number of ovules (13 in each loculus, compared with 21 figured for *A. foveolatum*) as well as by the puberulous branchlets and petioles. Fendler's no. 206 from Chagres, Isthmus of Panama, however, though agreeing well with the description of *A. foveolatum* as regards the long oblique-mouthed and shallowly lobed calyx, has densely puberulous petioles and 15 ovules in each loculus; and Weir's no. 72 from the Rio Magdalena, Colombia, which has truncate calyces resembling those of Sandwith's no. 617 but slightly longer, also has densely puberulous petioles and about 15 ovules, and furthermore has a greater development of pilosity on the lower surface of the leaflets than in the other material, even the finest veinlets being distinctly though minutely pilose. In the circumstances it seems best to assign the whole of the material provisionally to the same species.

According to Standley, l.c., the flowers of *P. foveolata* are pale purple; Weir describes them as crimson or deep orange; Jobert as red; Sagot and Richard as white; and the British Guiana plant described above had milk-white flowers. Bureau and K. Schumann give "Cipo de Canoa" as a vernacular name of *A. foveolatum* (presumably at Pará). They give the same vernacular name under *Memora consanguinea* (l.c. 267).

The distribution of *P. foveolata* (sensu lato), so far as we have been able to ascertain it, is as follows:

PANAMA. Chagres, Fendler 206.

COLOMBIA. Rio Magdalena, Weir 72.

BRITISH GUIANA. Moraballi Creek, Essequibo River, Sandwith 617.

SURINAM. Wullschlaegel 332 (Herb. Berol.); Wullschlaegel 1514, ex Bur. et K. Schum., l.c.

FRENCH GUIANA. Mana, Mélinon 125 (Herb. Paris.), Sagot 883 partim, et sine numero (Herb. Paris.). Maroni, Mélinon 205 (Herb. Paris.). Ile Portal, Sagot (Herb. Paris.). "In Lucis insula," Richard (Herb. Paris.). Without locality, Aublet (Mus. Brit.); Poiteau, ex DC., l.c.; Perrottet (Herb. Paris., type of *Adenocalymma brachybotrys* DC.); Mélinon 64 (Herb. Paris.).

BRAZIL. Santarem, Jobert 857 (Herb. Paris.). Pará, Sieber ex Bur. et K. Schum., l.c.

Mélinon's no. 64 bears a capsule 10.5 cm. long by 2.6 cm. wide, very minutely pubescent, with a raised longitudinal central costa, attenuate and apiculate for about 7 mm. at the apex; seeds 2.2 cm. long, 3.6 cm. wide including the thickened wings.

Aublet described *Bignonia kerere* as having yellow flowers, hairy filaments, a compressed ovoid capsule, and seeds with a membranous wing, characters which definitely exclude *Pachyptera foveolata*. The fruit and seed of *B. kerere* are figured in Aubl. Hist. t. 263, fig. 1-4.

Anemopaegma robustum Bur. et K. Schum. in Mart. Fl. Bras. viii. pars 2, 123 (1896).—*Bignonia robusta* Klotzsch in Rich. Schomburgk, Reisen, iii. 969 (1848), nomen.

BRITISH GUIANA. Banks of the Essequibo River, fl. Jan., *Rich. Schomburgk* 355 (typus in Herb. Berol.). Bartica, fl. yellow-white, April, *Jenman* 3632.

The fruit has not hitherto been described. One on Jenman's gathering is ellipsoid, suddenly narrowed at both ends, about 9 cm. long, 5 cm. wide, 3.5 cm. thick, very minutely velvety-pubescent.

Anemopaegma Parkeri *Sprague* in Bull. Herb. Boiss. sér. 2, vi. 375 (1906).

Essequibo River: Moraballi Creek, fl. Sept., *Sandwith* 345. Bush-rope in mixed forest; calyx inconspicuously lobed; corolla creamy-white.

Distr. Surinam, Brazil (Pará, *Spruce* 1130).

Anemopaegma surinamense *Sprague* in Bull. Herb. Boiss. sér. 2, vi. 374 (1906).

Mazaruni River, fl. Sept., *Jenman* 797: a bush-rope.

Distr. Surinam, French Guiana (*Mélinon* in Herb. Paris.).

Anemopaegma microcalyx (G. F. W. Mey.) *Bur. et K. Schum.* in Mart. Fl. Bras. viii. pars 2, 134 (1896); ovario sessili basi haud contracto, disco minimo pedimentiformi a congeneribus distinctum. Descriptio emendata ac ampliata e specimenibus demerarensibus confecta.

Frutex scandens. *Ramuli* hornotini subtetragoni, annotini subteretes, 4–5 mm. diametro, sed nodis valde expansi, irregulariter costati, cortice purpurascente glabro, consociebus glandularum patelliformium supra nodos sitis; ramuli hornotini 2–3.5 mm. diametro, glabri. *Folia* bifoliolata, cirrho apice trifurcato terminata; petiolus 3.5–6 cm. longus, purpurascens, juventute minute lepidotus, demum glaber; petioluli similes, 0.8–2.5 cm. longi; foliola elliptica vel late ovato-elliptica, apice breviter obtuse vel acute cuspidata, basi rotundata vel levissime cordata, 8–14 cm. longa, 5–9 cm. lata, tenuiter coriacea, opaca, supra glabrata, costa nervisque lateralibus leviter impressis, venulis inconspicuis, superficie rugosula, subtus minute inconspicue impresso-lepidota ceterum glabra, costa nervisque satis elevatis, tertiariis venulisque prominulis; nervi laterales utrinque 6–8, arcuato-ascendentes, procul a margine anastomosantes; cirrhi 12–18 cm. longi digitibus usque 7 mm. longis. *Thyrsi* axillares et terminales, 10–30 cm. longi; pedunculus 3–9 cm. longus, valde applanatus, costatus et striatus, sparse minute lepidotus; rhacheos similis internodia 3–10 cm. longa; cymarum lateralium inferiorum pedunculi 1.5–3.5 cm. longi; bractae triangulari-lanceolatae, acutae, 0.75–1 mm. longae, extra lepidotae, lepidoto-ciliatae, deciduae; pedicelli 0.7–1.5 cm. longi (florum terminalium usque 2 cm. longi). *Calyx* breviter aperte cupularis, 4.5–5 mm. (siccitate 3–3.5 mm. tantum) longus, primo visu truncatus, revera inconspicue repando-lobatus lobis plerumque denticulatis extra lepidibus detergilibus minute lepidotus, glandulis

patelliformibus impressis 1-3 infra singulos lobos, nervis mediis loborum superne extra leviter elevatis (sed in statu sicco haud cernendis). *Corolla* infundibularis, 6-10 cm. longa (statu sicco lobis inclusis), roseo-purpurea, extra superne glandulis patelliformibus impressis notata, tubi parte basali cylindrica circiter 5 mm. longa, limbo 4-8.5 cm. lato, lobis oblongo-obovatis 2-3.5 cm. longis, 2-3 cm. latis, extra minute lepidotis; lobi intus breviter villosi, ciliolati; tubus intus antice minute lepidotus, postice glaber. *Stamina* antica 1 cm. supra basin inserta, circiter 2 cm. longa, lateralia 0.7 cm. supra basin inserta, circiter 1.4 cm. longa; antherarum thecae divaricatae, singulae 3.5-4 mm. longae, connectivo truncato. *Staminodium* 1 mm. tantum supra basin insertum, 5 mm. longum. *Discus* brevissimus, pedimentiformis, 0.4 mm. altus, 0.4 mm. ultra basin ovarii horizontaliter productus. *Ovarium* ovoideo-oblongum, 3 mm. longum, densissime lepidotum; stylus circiter 3.2 cm. longus, inferne sparse lepidotus; ovula pro loculo quadriseriata, seriebus exterioribus interiores imbricantibus, singulis circiter 8-ovulatis. *Capsula* (ex exemplo cayennensi a Soubirou lecto descripta) linearis, 65 cm. longa, 1.5 cm. lata, applanata, nitida, glabra, linea longitudinali mediana obscura impressa.—*Bignonia microcalyx* G. F. W. Mey. Prim. Fl. Esseq. 211 (1818). *Anemopaegma cupulatum* Bur. et K. Schum. in Mart. Fl. Bras. viii. pars 2, 146 (1896), sed vix *Bignonia cupulata* Splitg.

BRITISH GUIANA. Without locality, *Herb. G. F. W. Meyer* (typus in *Herb. Goetting.*). Essequibo River: Moraballi Creek, a liane on low trees overhanging a creek, fl. pinkish-mauve, Nov., *Sandwith* 548. Essequibo River, fl. Sept., Oct., *Jenman* 1343. Kaieteur Falls, ann. 1872, *Appun* (Mus. Brit.). Corentyne River: Orealla, at river side, fl. Nov., *in Thurn*; Orealla, *Jenman* 10 (*Herb. Paris.*). Demerara, *Alexander Anderson*.

SURINAM. Without locality, *Wulfschlaegel* 1032 (*Herb. Berol.*); *Wulfschlaegel* 1336 (*Herb. Paris.*), distributed from the Brussels Herbarium as *Anemopaegma cupulatum*.

FRENCH GUIANA. St. Laurent, Maroni, fr. Oct. 1896, *Soubirou* (*Herb. Paris.*).

Distinguished from all species of *Anemopaegma* known to us by the ovary not being contracted at the base, the remarkably short disk, and the linear capsule. Probably represents a hitherto undescribed genus.

The above description, drawn up from the British Guiana material in the Kew Herbarium, differs in certain important details from the description of *A. microcalyx* given in Martius, *Flora Brasiliensis*. The ovules are *quadriseriate* in each loculus, as has been ascertained by dissection of flowers from different localities, and the disk is flattened and extremely short (not exceeding 0.4 mm. in height). Schumann described the ovules as *biseriate*, and the disk as *conical* and 2 mm. high. However, he cited only *Wulfschlaegel* 1032, which agrees essentially with our material, in particular in

having a flattened disk hardly 0.4 mm. high. As there was only one ovary available for examination we have not ventured to dissect it.

We have not seen *Wulfschlaegel* 59, the type of Bureau and K. Schumann's description of *Anemopaegma cupulatum*, but have no doubt as to the identity of the species, as their description agrees very well except for the statement that the ovules are *sexseriate*. On the other hand, as already indicated by Bureau and Schumann, it seems doubtful whether *Bignonia cupulata* Splitg. is conspecific. The leaves of that species are described as puberulous on the nerves beneath, the panicle as many-flowered with subpuberulous branches, the corolla as an inch long or longer, and ventricose in the middle, and the ovary as glabrous.

Pseudopaegma oligoneuron *Sprague et Sandwith*, sp. nov. ; affine *P. jucundo* (Bur. et K. Schum.) Urb., a quo calyce brevidentato differt.

Frutex ope cirrhorum alte scandens. *Ramuli* annotini teretes, circiter 5 mm. diametro, subcinnamomei, cortice irregulariter longitudinaliter fisso inconspicue sed densiuscule pubescente ; ramuli annotini teretes, sed infra nodos valde applanati, et ibidem glandulis numerosis patelliformibus ornati, costati, striati, densiuscule crispule pubescentes, 2.5-3 mm. diametro. *Folia* 2-foliolata, cirrho simpliciter vel furcato terminata ; petiolus 3.5-7 cm. longus, indumento ramulorum ; petioluli 1.5-2.5 cm. longi, pariter induti ; foliola late ovata usque orbiculari-ovata, breviter acute vel obtuse acuminata vel cuspidata, basi late rotundata vel subtruncata, 9-12 cm. longa, 5.5-8.5 cm. lata, adulta tenuiter coriacea vel chartacea, supra nitidula interdum fere bullata, costa nervis usque quaternariis impressis sed in canaliculis propriis elevatis, subtiliter arcte reticulata rete elevato, nervis venulisque sparse puberulis, subtus nervis prominentibus rete venularum prominulo vel inconspicuo, crispule pilosula saltem nervis venulisque ; nervi laterales utrinque 4-6, suprabasales valde obliqui. *Inflorescentiae* 3-multiflorae, axillares, pedunculatae, dense crispule pubescentes, 3-florae simpliciter cymosae, multiflorae corymboso-thyrsoideae 8-10 cm. diametro ; pedunculus usque 3 cm. longus, ramis usque 2 cm. longis ; bracteae thyrsi inferiores petiolatae, lanceolatae, acutae, in toto 1 cm. longae, superiores subulatae, 2-4 mm. longae ; bracteolae minutae ; pedicelli 3-10 mm. longi. *Calyx* breviter aperte campanulatus, 7 mm. longus dentibus exclusis, ore 1 cm. diametro, extra breviter appresse pubescens et superne infra lobos consociebus glandularum patelliformium parvarum ornatus, inconspicue lobatus, lobis breviter latissime depresso deltoideis conspicue crasse apiculatis, apiculis inclusis 1.5-2 mm. longis, apiculis ipsis 0.5-0.8 mm. longis. *Corolla* laete lutea, campanulato-infundibularis, 4-6.5 cm. longa, tubo 1-1.5 cm. supra basin constricto et prorsum curvato, parte basali subcylindrica sursum angustata, limbo 3.5-4 cm. lato ; lobi suborbiculares, circiter 1.5 cm. diametro ; corolla intus infra insertionem staminum cingulo breviter

villoso circiter 7 mm. longo instructa, ceterum glabra. *Stamina* glabra, anteriora (longiora) circiter 1.8 cm. supra basin corollae tubi inserta, vix ultra 2 cm. longa, lateralia 1.6 cm. supra basin inserta, 1.5 cm. longa; antherarum thecae arcuato-divaricatae, singulae 3-3.5 mm. longae. *Staminodium* 1.6 cm. supra basin insertum, circiter 6 mm. longum, glabrum. *Discus* pulvinatus, glaber, 2 mm. altus. *Ovarium* compressum, ambobus marginibus costatis, ellipsoideo-oblongum, 2.5 mm. longum, densissime lepidotum; stylus 2-2.5 cm. longus. *Ovula* circiter 6-seriata, seriebus mediis circiter 8-ovulatis.

BRITISH GUIANA. Upper Demerara River, fl. Sept., *Jenman* 4070 (typus). Essequibo River: Moraballi Creek, frequent in mora forest, fl. Oct., *Sandwith* 476. North-west District: Waini River, fl. April, *De La Cruz* 3784.

Clytostoma noterophilum (Mart.) Bur. et K. Schum. in Mart. Fl. Bras. viii. pars 2, 153 (1896).—*Bignonia noterophila* Mart. in DC. Prodr. ix. 148 (1845).

Essequibo River: Moraballi Creek, fl. Aug., *Sandwith* 71. Bush-rope; corolla pale purple, white within with purple stripes.

Distr. Venezuela (Cabuyaro, *Sprague* 159), Surinam, French Guiana, Brazil, Paraguay.

Apparently a very widely spread and variable species with polymorphic foliage.

Pithecoctenium granulosum (Bur. et K. Schum.) *Sprague et Sandwith*, comb. nov.—*Distictis granulosa* Bur. et K. Schum. in Mart. Fl. Bras. viii. pars. 2, 179 (1896). *Distictella granulosa* Urb. in Fedde, Repert. xiv. 310 (1916). *Pithecoctenium Uleanum* Kraenzl. in Notizbl. Bot. Gart. Berlin, vi. 377 (1915). *Pithecoctenium granulosum* Klotzsch in Rich. Schomb. Reisen, iii. 1158 (1848), nomen.

BRITISH GUIANA. 3° 38' N. Lat., *Rich. Schomburgk* 400 (typus in Herb. Berol.). Without locality, *Rob. Schomburgk* 229 S (Herb. Kew.).

BRAZIL. Rio Branco: Capoeira da Serra de Carauma, *Ule* 7706 (Herb. Kew., typ. coll. *P. Uleani* Kraenzl.).

The chief differences between *Pithecoctenium* and *Distictella* lie in the fruit, and in the presence on the branchlets of *Pithecoctenium* of fibrous ribs which eventually become detached; these appear to be absent in *Distictella*. Such fibrous ribs are present in *Distictella granulosa* and we therefore transfer it to *Pithecoctenium*, although the fruits are not known.

Schumann himself noted that *Distictis granulosa* differed remarkably from all other species of *Distictis*, but unaccountably failed to observe that it was closely related to *Pithecoctenium stipulare* Mart. and *P. scabriusculum* Mart., which he retained doubtfully in *Pithecoctenium*. So close is the agreement between *P. stipulare* and *P. granulosum* that we were at first inclined to treat them as a single species. They appear to differ, however, in the following characters:

pseudostipules conspicuous, suborbicular and glabrate in *P. stipulare*, smaller, oblong or spatulate, and tomentellous in *P. granulosum*; calyx-teeth distinct in *P. stipulare*, minute in *P. granulosum*; pairs of gland-fields on the calyx short and relatively broad (more or less elliptic) in *P. stipulare*, longer and narrower (oblong) in *P. granulosum*. We therefore treat the two species provisionally as distinct.

Schumann described the ovules as 6-seriate in *P. stipulare* and 4-seriate in *P. granulosum*. In the single ovary of *P. stipulare* (Glaziov 8812) dissected by us, the ovules were 8-seriate, the middle series being 7-ovulate; in an old ovary of *P. granulosum* (Rich. Schomburgk 400), the ovules had already developed wings, and the number of series could not be ascertained exactly, but it was certainly not less than 6. There does not appear to be any appreciable difference between the shapes and sizes of the disk and ovary of *P. stipulare* and those of *P. granulosum*. The disk is 1.5–2 mm. high in both, and although the old ovary of *P. granulosum* is 5 mm. long, as compared with 3.5 mm. for the ovary of *P. stipulare*, this difference seems to be merely a matter of age.

Distictella Parkeri (DC) *Sprague et Sandwith*, comb. nov.—*Bignonia Parkeri* DC. in DC. Prodr. ix. 157 (1845). *Distictis guianensis* Bur. et K. Schum. in Mart. Fl. Bras. viii. pars 2, 177 (1896). *Distictella guianensis* Urb. in Fedde, Repert. xiv. 310 (1916). *Pithecoctenium guianense* Klotzsch in Rich. Schomb. Reisen, iii. 970 (1848), nomen.

BRITISH GUIANA. Without locality, *Parker* (typ. coll.); banks of Demerara River, fl. March, *Rich. Schomburgk* 1709 (typus *D. guianensis* in Herb. Berol.); Rockstone, fl. June, *R. Ward* 8831; Berbice River, fl. March, *Jenman* 1662; without locality, *Hancock* 92.

Distictella racemosa (Bur. et K. Schum.) Urb. in Fedde Repert. Sp. Nov. xiv. 310 (1916).—*Distictis racemosa* Bur. et K. Schum. in Mart. Fl. Bras. viii. pars 2, 179 (1896).

Essequibo River: on right bank near mouth of Moraballi Creek, fl. Nov., *Max Nicholson* in *Sandwith* 588. A climber with white flowers. Other collections from the Colony are: *Jenman* 2356 (Macouria River), *Jenman* 799, 801 (Mazaruni River), *Jenman* 17 and *im Thurn* (Corentyne River: Orealla).

Distr. Guiana, Brazil.

The leaves on the type-specimens of *Distictis racemosa* (Surinam, *Wulfschlaegel* 1033, and Pará, *Martius* in Herb. Brux.) are all in a juvenile and membranous condition but, allowing for this circumstance, seem to agree very well with those of the British Guiana material cited above, which are all fully developed and coriaceous. The calyces of the type-specimens are tubular-campanulate and 1.4 cm. long, while those of the British Guiana material are campanulate and 0.9–1.2 cm. long, but this is the only noteworthy difference observed. Until further and better-developed material is received

from Surinam or the Amazons, it seems undesirable to separate the British Guiana plant, even as a variety.

Roentgenia sordida (*Bur. et K. Schum.*) *Sprague et Sandwith*, comb. nov. ; *R. bracteomanae* (K. Schum. ex Sprague) Urb., affinis, petiolis petiolulisque inflorescentiaequae rhachi dense puberulis vel tomentellis, foliis ovatis costa nervisque utrinque distincte puberulis, bracteis multo minoribus haud foliaceis, calyce brevior manifestius tuberculato differt.

Frutex alte scandens, ope cirrhorum late pervagans ; ramuli subquadrati, hornotini leviter striati, cinnamomei, dense crispule puberuli vel tomentelli, annotini cinerei, glabrati. *Folia* 2-foliolata, nonnulla cirrho longo apice breviter trifurcato terminata, cirrhis tamen plerumque deciduis ; petiolus 0.7–3.5 cm. longus, indumento ramulorum, cirrhi post lapsum infra in junctioe petiolulorum cicatrice magna patelliformi notatus ; petioluli 0.5–1.6 cm. longi, pariter induti. *Foliola* ovata, apice obtusa, obtuse cuspidulata vel breviter acuminata, basi primo visu rotundata, saepius oblique levissime cordata, 6–14.5 (–18) cm. longa, 3–8 (–9) cm. lata, adulta rigide chartacea vel tenuiter coriacea, supra opaca, costa nervisque usque tertiariis impressis, venulis nullis cernendis, ubique sed inconspicue lepidota, lepidibus facile deterrentibus, praeterea costa nervisque lateralibus puberulis, ceterum glabra, subtus nervis prominentibus rete venularum obscuro laxissimo, indumento simili ; nervi laterales utrinque 7–8, satis longe a margine anastomosantes ; prophylla ramulorum (pseudostipulae) foliacea, suborbicularia, breviter petiolata, siccitate nigrescentia, 5–7 mm. diametro. *Inflorescentiae* axillares atque terminales, pedunculatae, thyrsoidae, cymis lateralibus sessilibus 3-plurifloris, interdum in thyrsum foliatum compositum usque 25 cm. longum aggregatae ; pedunculus 1.5–7 cm. longus ; rhachis 2.5–5 cm. longa, ut pedunculus dense puberula necnon lepidota ; bractee primariae incurvae, lineari-subulatae, 2.5–6 mm. longae, pariter indutae ; pedicelli 3.5–7 mm. longi, lepidoti, tuberculati. *Alabastra* ovoidea, cuspidato-acuminata, siccitate nigrescentia, vernicosa, tuberculata. *Calyx* campanulatus, primo visu truncatus sed breviter irregulariter lobatus lobis plerumque apiculatis, 5.5–6.5 mm. longus, extra dense lepidotus, superne infra lobos glandulis pluribus patelliformibus immersis ornatus, densiuscule tuberculatus. *Corolla* alba, sinubus intus purpureo-maculatis, tubo intus cremeo purpureo-vittato, campanulato-infundibularis, 5–6 cm. longa, tubi parte basali cylindrica 6–8 mm. longa, limbo 3.5–4 cm. lato, lobis obovato-oblongis 1.5–2 cm. longis, extra dense stipitato-lepidota ; lobi intus dense lepidoti, secus venas plus minusve albo-villosi ; tubus intus antice sparsius lepidotus, postice subglaber, infra insertionem staminum villosus. *Stamina* circiter 9 mm. supra basin tubi inserta, antica 1.6 cm., postica 1 cm. longa ; filamenta inferne albo-villosa ; antherarum thecae subdivaricatae, eae staminum anticorum 3.5 mm., lateralium vix 3 mm. longae. *Staminodium* circiter 2 mm. longum, inferne villosum.

Discus nullus. *Ovarium* oblongum, indistincte subquadratum, levissime compressum, 4 mm. longum, 1.3 mm. et 1 mm. latum, densissime pallide fulvo-lepidotum; stylus circiter 2.5 cm. longus, inferne sparse lepidotus; ovula pro loculo 33–36, biseriata, seriebus singulis 16–18-ovulatis. *Capsula* (e *Benoist* 897 descripta), linearis, usque 34 cm. longa, 1.6–2 cm. lata, pallide brunnea, glabra. *Semina* 1.8 cm. longa, 5–6 cm. lata; embryo circiter 1 cm. diametro.—*Arrabidaea sordida* Bur. et K. Schum. in Mart. Fl. Bras. viii. pars 2, 30 (1896). *Bignonia sordida* Klotzsch in Rich. Schomburgk, Reisen, iii. 1158 (1848), nomen.

BRITISH GUIANA. Essequibo River: Moraballi Creek, bush-rope in morabukea forest, fl. Nov., *Sandwith* 577. Cuyuni River: near Tinamu Fall, fl. March, *Martyn* 289; Stop-off Fall, by riverside, fl. Feb., *Brinsley* in *Forestry Department* no. 2050. Corentyne River: Orealla, fl. Nov., *Jenman* 496, fl. Sept., *in Thurn*. Upper Rupununi River, fl. May, *Rich. Schomburgk* 1296 (typus in Herb. Berol.).

FRENCH GUIANA. Without locality, *Martin* (Mus. Brit.). St. Jean, fr. March, *Benoist* 897 (Herb. Paris.).

The corolla is white with a purple blotch at each sinus, and the tube is cream-coloured within with purple stripes.

This species was originally described from very inadequate material, the inflorescences being incomplete, and nearly all the bracts and bracteoles having fallen off.

R. sordida is closely allied to *R. bracteomana*, from which it seems to differ chiefly in the shape of the leaflets, and the inflorescence.

Roentgenia agrees with *Cydista* in the corolla and ovary being lepidote, and in the absence of a disk. The inflorescence, which is a thyrses with the lateral cymes sessile and contracted, with consequent aggregation of the bracts, gives it a peculiar facies. Sprague suggested in 1909 (Verh. Bot. Ver. Brandenburg, l. 127) that *Cydista bracteomana* might represent a new genus, and this was confirmed in 1916 by Urban (Ber. Deutsch. Bot. Ges. xxxiv. 748), who separated it as a new genus, *Roentgenia*, chiefly on account of the trifurcate tendrils and plurisulcate pollen-grains.

Memora bracteosa (DC.) Bur. ex K. Schum. in Engl. & Prantl, Nat. Pflanzenfam., iv. 3b, 226 (1894); Bur. et K. Schum. in Mart. Fl. Bras. viii. pars 2, 270 (1897). *Spathodea*? *bracteosa* DC. in DC. Prodr. ix. 208 (1845), excl. syn.

Essequibo River: Moraballi Creek, fl. Oct., *Sandwith* 505. Bush-rope in mixed forest, only once seen. Corolla rich orange-yellow.

Distr. Guiana, Brazil. Apparently the first record from British Guiana.

The British Guiana specimens agree with a specimen collected by Poiteau in French Guiana named *Spathodea bracteosa* DC. by Bureau, and with *Sagot* 404, both of which are stated to have yellow flowers. De Candolle cited *Bignonia alba* Aubl. Hist. Pl. Guiane, ii. 365, iv. t.

266, as a synonym, but this was described by Aublet as white-flowered, possibly owing to confusion with some other species. In the circumstances we reject Aublet's epithet *alba*. De Candolle, relying on Aublet, stated that the flowers of *Spathodea bracteosa* were white.

Memora ovata (Bur. et K. Schum.) Sprague et Sandwith, comb. nov.—*Tanaecium ovatum* Bur. et K. Schum. in Mart. Fl. Bras. viii. pars 2, 187 (1896). *Spathodea ovata* Klotzsch in Rich. Schomburgk, Reisen, 1158 (1848), nomen. *Memora consanguinea* Bur. et K. Schum. l.c. 267 (1897). *Spathodea consanguinea* Klotzsch, l.c., nomen.

The type-specimens of *Tanaecium ovatum* (Rich. Schomburgk 499: Herb. Berol.) and *Memora consanguinea* (id. 537: Herb. Berol.) have been examined, and prove to represent one and the same species, which unquestionably belongs to the genus *Memora*. It is unfortunate that the two species were published in different years so that the specific epithet *ovata* has to take precedence over *consanguinea*, thus necessitating a new combination. The known distribution of this species is given below.

BRITISH GUIANA. Tacutu River, fl. April, Rich. Schomburgk 499 and 537 (Herb. Berol.); Quimatta, Rupununi River, fl. Oct., Jenman 5574; Camounie Creek, fl. April, Jenman 2031; Tinamu Fall, Cuyuni River, fl. March, Martyn 279; near Stop-off Fall, Cuyuni River, fl. March, Brinsley in Forestry Department no. 2044.

M. ovata is a riverside climber, with showy yellow or pale yellow flowers.

Jacaranda copaia (Aubl.) D. Don in Edinb. Phil. Journ. 1823, 267.—*Bignonia copaia* Aubl. Hist. Pl. Guiane, ii. 650, iv. t. 265 (1775).

Essequibo River: Moraballi Creek, fl. Sept., Sandwith 189. A large tree, 108 ft. high, 16 in. diam., with pale bluish-mauve flowers. Frequent in mixed forest and "low bush."

Vernacular name (Arawak), Futui.

Distr. Nicaragua, Panama, Northern South America.

Jacaranda rhombifolia G. F. W. Mey. Fl. Esseq. 213 (1818).—*Bignonia filicifolia* Anders. in Trans. Soc. Arts. xxv. 200 (1807), nomen. *Jacaranda filicifolia* D. Don, l.c. 266.

Essequibo River: in low bush on the sandy right bank at the first Falls, fl. Sept., Sandwith 219. A low tree with inflorescences borne on leafless branches. Flowers bluish-mauve.

Vernacular name (Arawak), Sand Trysil.

Distr. Guiana. Occurrence elsewhere in Northern South America uncertain.

Three other Bignoniaceae were collected during the Oxford University Expedition to British Guiana, namely, **Tabebuia serratifolia** (Vahl) Nichols. (vide Kew Bull. 1932, 26); **T. hypolepra** Sprague et Sandwith (l.c. 25); and **Schlegelia violacea** (Aubl.) Griseb. (l.c. 1930, 214).

X.—TROPICAL AFRICAN PLANTS: IX.*

Cadaba obovata Bruce, sp. nov. [Capparidaceae]; affinis *C. farinosae* Forsk., sed foliis majoribus obovatis chartaceis, floribus minoribus differt.

Frutex parvus; ramuli juniores leviter lepidoti, pilis sparsis strigosis conspicuis vestiti. *Folia* varia, majora late obovata, 3–5 cm. longa, 1.7–3.2 cm. lata, apice truncata, basi cuneata, minora oblongo-obovata, 1–3 cm. longa, 0.5–1 cm. lata, utrinque rotundata, minute mucronata, supra leviter lepidota, demum glabrescentia, infra glabra, nervis lateralibus utrinsecus circiter 4, petiolis circiter 2 mm. longis. *Inflorescentia* racemosa, circiter 3 cm. longa, pedicellis gracilibus 1.5 cm. longis. *Sepala* 4, oblonga, apice acuminata, mucronata, circiter 6 mm. longa. *Petala* 4, longissima, unguiculata, ungue circiter 9 mm. longo, limbo linearilanceolato 2 mm. longo. *Stamina* 4, filamentis 5 mm. longis, androphoro 4 mm. longo. *Ovarium* anguste oblongum, 2 mm. longum, gynophoro circiter 1 cm. longo. *Fructus* non visus.

TANGANYIKA TERRITORY: Upare district 2300 ft., *A. E. Haarer* 823.

This plant is characterized by the variation in leaf form; the larger leaves are broadly obovate and narrowed to the base, whilst the smaller ones are oblong-obovate and rounded at the base.

Crassula parvifolia Bruce, sp. nov. [Crassulaceae]; affinis *C. pentandrae* Schoenl., sed habitu majore crassiore, foliis minoribus obtusis vel subacutis, floribus pedicellatis differt.

Herba perennis, glabra, semi-prostrata, caulibus ramosis basi carnosus 5 mm. diametro, ramis erectis circiter 15 cm. longis, internodiis 2–3 mm. longis. *Folia* opposita, parva, crassa, basi cohaerentia, ovato-lanceolata, apice obtusa vel subacuta, 2–3 mm. longa. *Flores* flavo-virides, pentameri, pedicellati, in axillis inferioribus 3–4 in superioribus 1–2 dispositi. *Sepala* 5, lanceolata, acuta, basi cohaerentia, circiter 1 mm. longa. *Petala* 5, lanceolata, acuta, circiter 1.5 mm. longa. *Stamina* 5, petalis breviora. *Carpella* 5, disperma, circiter 1 mm. longa, stylis brevibus.

KENYA COLONY: Longonot, 9000 ft.; in volcanic soil on the inside edge of the crater; semi-prostrate herb, flowers yellowish green, *E. R. Napier* 221 (type).

This plant is characterized by its stout much branched stem and small leaves.

Dombeya emarginata Bruce, sp. nov. [Sterculiaceae]; affinis *D. pedunculatae* K. Schum., sed foliis majoribus emarginatis differt.

Frutex usque ad 3.3 m. altus; rami stellato-pubescentes. *Folia* ovato-rotundata, 3-lobata; lamina 5–9 cm. longa, 6–10 cm. lata, supra leviter infra dense stellato-pubescentia, apice emarginata, apiculata, basi anguste cordata, nervis circiter 7 infra prominentibus, margine

*Continued from *K.B.* 1931, p. 275.

crenulata, petiolis 4·5–6 cm. longis pubescentibus. *Stipulae* lanceolatae, acuminatae, leviter pubescentes. *Inflorescentia* multiflora, longe pedunculata, pedunculo terete pubescente usque ad 13 cm. longo, pedicellis sub anthesi usque ad 2 cm. in fructu usque 3 cm. longis. *Bracteae* ovato-lanceolatae, leviter pubescentes, deciduae. *Sepala*, persistentia, lanceolata, acuminata, extra stellato-pubescentia, intus glabra, circiter 1·3 cm. longa, demum reflexa. *Petala*, alba, late ovata nec obliqua, glabra, 1·6 cm. longa, 1·4 cm. lata, apice obtusa, decidua. *Stamina* 10, antheris anguste oblongis 5 mm. longis, filamentis brevibus tubo stamineo 2 mm. longo; staminodia 5, linearia, staminibus subaequalia. *Ovarium* pentamerum, tomentosum, ovulis pro loculo circiter 5, stylo glabro stigmatibus 5. *Capsula* pubescens, seminibus glabris 4 pro loculo.

UGANDA: Mubendi, 4500 ft., shrub up to 10 ft., flowers white, decorative, *Hargreaves* 2046 (type); *J. D. Snowden* 17; Mulange, 4000 ft., grasslands and savannah, 6 ft. high, flowers white, local, *R. A. Dummer* 4188; Mabira Forest, 3722 ft., in open parts of the forest and savannah and bush land, flowers white, *T. D. Maitland* 521; Mulanda Hill, near Kabulamuliro, flowers white, *T. D. Maitland* 96 AB.

Pavonia Rogersii *N. E. Brown* [Malvaceae]; affinis *P. clathratae* Mart., sed glanduloso-pubescent, foliis hastatis et carpellis triangularibus medio utrinque unidentatis nec alatis differt.

Herba elata, ramis petiolis pedicellis bracteisque pilis patentibus glanduliferis obtectis. *Folia* deflexa, hastata vel ovato-hastata, 1–3 cm. longa, basi 0·7–1·5 cm. lata, dentata, utrinque pilis simplicibus et stellatis conspersa; petioli 1–1·5 cm. longi. *Pedicelli* infra articulationem circa 1·5 cm. longi, demum 2·5–4 cm. longi. *Bracteae* saepe 11, anguste lineares, 1·5–2 cm. longae, pilis longis et pilis glanduliferis obtectae. *Calyx* extra pubescens, intus glaber; tubus 2 mm. longus; lobi 5–6 mm. longi, lanceolati vel ovato-lanceolati, acuti. *Petala* obovata, 1·5 cm. longa, glabra, lutea. *Tubus stamineus* glaber. *Carpella* 6 mm. longa, 5 mm. lata, triangularia, angulis externis medio unidentatis, glabra.

RHODESIA: Without locality, *F. A. Rogers*, 13242.

Erythrina rotundato-obovata *E. G. Baker*, sp. nov. [Papilionaceae]; ad *E. indicam* Lam. accedens a qua foliorum ambitu differt.

Arbor 9–10 m. alta, copiose ramosa, spinis magnis. *Folia* trifoliolata, foliolis terminalibus rotundato-obovatis vel transverse ellipticis 4–8 cm. longis 5–10 cm. latis superne glabris subtus pallidioribus pubescentibus, foliolis lateralibus ovalibus vel late ovalibus leviter inaequilateralibus 2·5–5 cm. longis 3–5·5 cm. latis, petiolis spinosis. *Flores* in racemis dispositi; pedunculi virgati, pubescentes, 25–30 cm. longi; pedicelli 8–12 mm. longi, pubescentes. *Calyx* spathaceus, 2·3–3·2 cm. longus, glaber vel subglaber, apice brevissime dentatus. *Petala* rubra. *Vexillum* oblongo-obovatum,

plus minusve 5 cm. longum et 1.5-2 cm. latum. *Alae* oblique oblongae vel ovatae, 2-2.5 cm. longae et plus minusve 9 mm. latae. *Carina* naviculariformis, plus minusve 1.5 cm. longa et 9-10 mm. lata. *Stamina* 5-6 cm. longa. *Legumen* juvenile tomentosum, rectum, 9-10-spermum.

TANGANYIKA TERRITORY: S.W. Uмба Steppe; Kivingo, alt. 1500 ft., very scattered in *Acacia* desert-grass country on pale red soil, Dec., *Greenway* 1974 (type).

This plant is a close ally of *Erythrina indica* Lam., in the subgenus *Stenotropis* Hassk.

Indigofera tanganyikensis E. G. Baker, sp. nov. [Papilionaceae]; ad *I. suaveolentem* Jaub. et Spach. accedens sed foliolis 5-9, calycis dentibus glandulosis distinguitur.

Suffrutex erectus copiose ramosus, ramis teretibus pubescentibus. *Stipulae* minutae, lineares. *Folia* imparipinnata, 2-4-juga, cum impari foliolis parvis oblongo-obovatis 4-5 mm. longis et usque 2 mm. latis superne glabris subtus strigosus. *Pedunculi* graciles, plus minusve 1 cm. longi, ad apicem 1-3-flori. *Flores* parvi. *Calyx* brevis, strigosus, plus minusve 1 mm. longus, dentibus apice glandulosis. *Vexillum* obovatum, 4-5 mm. longum. *Carina* naviculariformis, 4-6 mm. longa. *Legumen* rectum, cylindricum, apice mucronatum, 1.2-1.8 cm. longum, demum glabrum, 7-10-spermum.

TANGANYIKA TERRITORY: Singida; alt. 5000 ft., March, B. D. Burt, 1738 (type).

UGANDA: Common in sandy soil along the shores of Lake Victoria, alt 3700 ft.; a herb up to 1 ft. or more high, *Mettam* 296.

This is an ally of *Indigofera suaveolens* Jaub. et Spach., and is a member of the section *Dissitiflorae*. The distinguishing features are the 5-9 oblong-obovate leaflets, the short calyx with its teeth glandular at the apex, the small flowers and straight, cylindrical, 7-9-seeded legume.

Haarera Hutch. et Bruce, gen. nov. [Compositae]; inter genera tribus Vernonearum involucri bracteis subulatis in receptaculum cavatum late turbinatum connatis distinctissimum.

Capitula homogama, tubuliflora. *Involucrum* late turbinatum, bracteis circiter 8-seriatis imbricatis subulatis numerosis exterioribus gradatim brevioribus. *Receptaculum* cavatum et late turbinatum, alveolatum. *Corollae* aequales, actinomorphae, tubo tenui, limbo profunde 5-lobato, lobis angustissimis apice caudato-appendiculatis extra glandis sessilibus instructis. *Antherae* apice inappendiculatae, basi late sagittatae. *Styli rami* subulati, hirtelli. *Achaenia* anguste 4-alata, glabra. *Pappi setae* caducissimae, paucae, barbellatae. *Herba* erecta, superne ramosa, ubique pilis longis inferne transverse locellatis superne elongatis et unilocellatis ornata; *folia* alterna, sessilia, integra vel subintegra, infra glanduloso-punctata. *Capitula* solitaria, pedunculata. *Flores* rubro-purpurei.



Haaverea alternifolia Hutch. et Bruce, gen. nov. 1, hair from peduncle. 2, part of involucre opened out. 3, flower with ovary and pappus removed. 4, anthers. 5, style-arms. 6, achene and pappus-seta. 7, achene.

Haarera alternifolia (O. Hoffm.) Hutch. et Bruce, comb. nov.—*Bothriocline alternifolia* O. Hoffm. in Engl. Pflanzenw. Ost.-Afr. C: 403 (1895).

Herba erecta, usque ad 2 m. alta; rami striati, pilis paucis infra medium multilocellatis pubescentes. *Folia* alterna, sessilia vel subsessilia, lanceolata vel obovato-oblancheolata, apice obtusa, ad basin angustata, 3–9 cm. longa, 1–2.5 cm. lata, supra glabra, infra nervis leviter scabrido-pubescentibus et glandulosa. *Capitula* solitaria, pedunculata, circiter 1.6 cm. longa et lata, turbinata, multiflora. *Involucri* bracteae circiter 8-seriatae, subulato-lineares, acute acuminatae, pilis purpurascenscentibus pubescentes, subaequales, circiter 7 mm. longae, interiores lanceolatae, acuminatae, basi in receptaculum profunde concavum coalescentes. *Flores* circiter 1 cm. longi, purpurei. *Corolla* 5-lobata, lobis anguste lanceolatis usque ad 3 mm. longis apice caudato-appendiculatis, tubo glanduloso circiter 6 mm. longo. *Stamina* 5, antheris oblongo-lanceolatis circiter 3 mm. longis. *Achaenia* anguste obovata, circiter 1.5 mm. longa, teretia, siccitate 4-alato-angulata, inter angulos maculis multis fuscis linearibus minutis notata. *Stylus* 9 mm. longus, bilobatus, lobis gracilibus pubescentibus 3 mm. longis. *Pappi setae* caducae, paucae, barbellatae, circiter 2.5 mm. longae.

TANGANYIKA TERRITORY: Kiruru, Upare, 2600 ft., near swamp, *A. E. Haarer* 498; Samé, Pare district, 2800 ft. approximately, *A. E. Haarer* 1241; Kikori, 4200 ft., very common purple-flowered herb to 6 ft. high, forming thick masses of flower in *Acacia formicarum* wood and associated with *Hibiscus cannabinus*, *B. D. Burt* 2770; Pangani and Himo R., 2200–2500 ft., *Volkens* 554 (type).

This new genus, which is named in honour of Mr. A. E. Haarer, of the Department of Agriculture, Tanganyika Territory, is very remarkable amongst the *Vernonieae* in having a hollow turbinate receptacle. This is formed by the concretion of the numerous narrow linear involucral bracts. The indumentum on these and on the upper part of the shoots is composed of multicellular hairs, the lower part of each hair being beautifully marked with purplish transverse walls, the upper part being unicellular, elongated and pale coloured.

Barleria spinisepala Bruce, sp. nov. [Acanthaceae]; affinis *B. homotrichae* C. B. Cl., sed floribus solitariis axillaribus, sepalis anguste lanceolatis spinulosis differt.

Suffruticosa circiter 3 dm. alta, ramis teretibus reflexo-pubescentibus. *Folia* obovata, breviter petiolata, circiter 2 cm. longa, 1 cm. lata, apice mucronata, basi anguste cuneata, supra leviter pubescentia, infra breviter reflexo-pubescentia, nervis lateralibus utrinsecus 4 infra praesertim prominentibus. *Flores* purpurei, axillares, solitarii, sessiles. *Bracteae* circiter 1.5 cm. longae, ad spinas pinnatifidas reductae. *Sepala* 4, adaxialia et abaxialia circiter 1.5 cm. longa, 0.3 cm. lata, anguste lanceolata, marginibus spinulosis, lateralalia 1 cm. longa, 0.2 cm. lata, lanceolata, acuminata,

integra. *Corolla* subaequaliter 5-lobata, tubo usque ad 2.1 cm. longo extra leviter pubescente, lobis ovatis circiter 1 cm. longis 0.8 cm. latis apice rotundatis. *Stamina* 2, medio tubi affixa, filamentis circiter 7 mm. longis basi pubescentibus, antheris oblongis 2 mm. longis e tubo leviter exertis. *Staminodia* 2 vel 3. *Discus* cupuliformis, circiter 1.5 mm. altus, margine crenulato. *Ovarium* ovoideum, glabrum, stylo 1.2 cm. longo ad basin dense pubescente; ovula 4. *Capsula* glabra, circiter 1.6 cm. longa, 0.5 cm. lata; semina 2 vel 3, hirta, suborbicularia, applanata.

KENYA COLONY: Kajiado, 5,700 ft., in dry pasture land, a small woody herb about 1 ft. in height, with thorny bracts and mauve flowers, *E. R. Napier* 755 (type); N. E. slopes of Aberdare mountains, 6000 ft., in poor stony ground, *W. J. Dowson* 542.

This plant belongs to the *Acanthoidea* Section of the genus *Barleria*; its narrow spiny pinnatifid sepals are a distinguishing feature.

Dicliptera Napierae *Bruce*, sp. nov. [Acanthaceae]; affinis *D. mossambicensi* Klotsch, sed bracteis obtusis, inflorescentiis laxioribus, pedunculis multo longioribus differt.

Herba circiter 3–5 dm. alta; rami albo-pubescentes, indumento reflexo. *Folia* ovata vel ovato-rotundata, sessilia vel breviter petiolata, 0.9–1.8 cm. longa, 0.7–1.4 cm. lata, apice rotundata usque acuta vel leviter acuminata, basi rotundata, utrinque pubescentia. *Cymae* laterales, longe pedunculatae, pedunculis sub anthesin 8 mm. longis, in statu fructifero usque ad 4 cm. longis. *Bracteae* ovatae, circiter 1.1 cm. longae, 0.8 cm. latae, apice obtusae vel subacutae, mucronulatae, glabrescentes, conspicue reticulatae. *Bracteolae* lanceolatae, circiter 6 mm. longae, acuminatae. *Calyx* 5-lobatus, lobis lineari-lanceolatis circiter 3 mm. longis. *Corolla* magenta vel pallide purpurea, bilabiata, extra pubescens, tubo circiter 8 mm. longo, labio superno 1 cm. longo, infero 1.1 cm. longo apice 3 dentato. *Stamina* 2; filamenta reflexo-pubescentia, antherarum thecis superpositis. *Ovarium* 1.5 mm. longum, stylo 1.4 cm. longo glabro. *Capsula* circiter 7 mm. longa, glabra, seminibus 4 glabris 3 mm. diametro.

KENYA COLONY: Ngong, 7,000 ft., "wet weather" river bed amongst rocks and grass, flowers mauvish-pink, bracts persistent but turning brown, *E. R. Napier* 539 (type); Ulu, thorn country in short grass, sandy soil amongst rocks; herb about 1–1½ ft. high, magenta flowers and anthers, papery bracts, very few flowers out at one time, *E. R. Napier* 30.

This plant is characterized by the large persistent ovate bracts.

Dyschoriste decumbens *Bruce*, sp. nov. [Acanthaceae]; affinis *D. Volkensii* Lindau, sed foliis minoribus spathulatis, corollae tubo longiore et angustiore differt.

Suffrutex parvus, decumbens; ramuli juniores breviter puberuli, maturi glabrescentes. *Folia* spathulata, breviter petiolata,

1.0–1.5 cm. longa, 0.5–0.8 cm. lata, obscure crenulata, apice truncata vel rotundata, minute apiculata, supra leviter infra dense pubescentia; nervi laterales utrinsecus 4. Flores viridi-flavi, axillares, sessiles, saepe solitarii vel geminati. Calyx cylindricus, 1.2 cm. longus, extra dense griseo-puberulus, intus adpresso-pubescent, tubo circiter 8 mm. longo, lobis 5 lineari-lanceolatis acutis 4 mm. longis. Corolla subaequaliter 5-lobata, extra leviter pubescens, tubo circiter 2.2 cm. longo anguste cylindrico, lobis obovatis 9 mm. longis 5 mm. latis apice rotundatis. Stamina 4, e tubo leviter exserta, antheris 1.5 mm. longis basi mucronatis. Capsula 1.3 cm. longa, subglabra.

KENYA COLONY: Rift valley, Narak road, just before it turns north after travelling parallel with the Ngong Hill, 5000 ft.; in scrub country subject to drought; decumbent and creeping among the roots of *Acacia* and dry grass, flowers greenish yellow, sometimes faintly tinged with purple, *E. R. Napier* 413 (type).

This plant is characterized by its small spatulate leaves, which are clustered together at the nodes.

Isoglossa ovata Bruce, sp. nov. [Acanthaceae]; affinis *I. strigosulae* C. B. Cl. sed floribus minus pubescentibus majoribus, foliis majoribus basi latioribus differt.

Herba erecta, usque ad 1 m. alta, ramulis subteretibus glabrescentibus. Folia ovata, usque ad 9 cm. longa et 5.5 cm. lata, apice acuta vel acuminata, basi rotundata vel rarissime acuta, inferiora petiolata, petiolis usque ad 3 cm. longis, superiora subsessilia, utrinque leviter strigoso-pubescentia. Inflorescentiae laxae paniculatae, terminales et axillares, leviter striguloso-pubescentes, bracteis linearibus circiter 5–8 mm. longis. Calyx fere ad basin 5-lobatus, lobis pubescentibus lineari-lanceolatis usque ad 7 mm. longis. Corolla alba vel rosea, bilabiata, leviter pubescens, 1.4–1.8 cm. longa, tubo lobis longiore, labio inferiore 3-lobato, superiore 2-lobato. Stamina 2, filamentis glabris 1.3 cm. longis, antheris ovatis bilocularibus, thecis superpositis. Ovarium oblongo-ovoideum, circiter 4 mm. longum, stylis circiter 1.3 cm. longis. Capsula circiter 1.5 cm. longa, 4 mm. lata, glabrescens.

KENYA COLONY: Near Nairobi, Aug. 1903, Whyte (type); Magathi, 6000 ft. in forest undergrowth, tall herb rather straggling, varying from 1–3 ft., flowers white, *E. R. Napier* 85.

TANGANYIKA TERRITORY: Mgigile, Pare district, approximately 3500 ft., *A. E. Haarer* 1348; Keni, Rombo, East Kilimanjaro, approximately 4000 ft., in hedgerow, flowers pink, herbaceous, 3 ft., *A. E. Haarer* 216.

XI.—CHIDLOWIA, A NEW TREE GENUS OF CAESALPINIACEAE FROM WEST TROPICAL AFRICA. A. C. HOYLE.

Chidlowia Hoyle, gen. nov. [Caesalpinaceae-Amherstieae], affinis *Schotiae* Jacq., a qua calycis tubo brevior 5-dentato, dentibus apertis, ovarii stipite tubo haud adnato, paniculis elongatis, legumine magno elongato, recedit.

Calycis tubus campanulatus, aequaliter et brevissime dentatus, dentibus 5 apertis. *Discus* carnosus, calycis tubo adnatus, margine libero et petala staminaque ferente. *Petala* 5, subaequalia, sessilia, valde imbricata, calyce magis longiora. *Stamina* 10, libera, filamentis glabris filiformibus; antherae uniformes, loculis longitudinaliter dehiscentibus. *Ovarium* stipitatum, ∞ -ovulatum; stylus filiformis stigmatibus parvis terminalibus. *Legumen* oblongo-lineare, magnum, plano-compressum, coriaceo-lignosum, vi elastica dehiscens. *Semina* orbiculata, compressa, funiculo brevissimo crasso; albumen 0; cotyledones planae, carnosulae. — Arbores inermes. Folia abrupte pinnata, foliolis coriaceis. Stipulae parvae, caducae. Flores rubri, in paniculas elongatas conferti. Bracteae et bracteolae minutae, caducissimae.

Species 1, Africae tropicae occidentalis verisimiliter endemica.

Calyx-tube campanulate, regularly and very shortly dentate, teeth 5, open in aestivation. *Disc* fleshy, adnate to the calyx-tube, its margin free and bearing the petals and stamens. *Petals* 5, subequal, sessile, strongly imbricate, much longer than the calyx. *Stamens* 10, free, with filiform filaments, glabrous; anthers uniform, with loculi dehiscing longitudinally. *Ovary* stipitate, ∞ -ovulate; style filiform with a small terminal stigma. *Legume* oblong-linear, large, flattened, coriaceous-woody, dehiscing elastically. *Seeds* orbicular, compressed, with a very short broad funicle; endosperm 0; cotyledons flat, fleshy. — Unarmed trees. Leaves abruptly pinnate; leaflets coriaceous. Stipules small, caducous. Flowers red, borne in elongated slender panicles. Bracts and bracteoles minute, very early caducous.

Species 1, apparently endemic in West Tropical Africa.

Chidlowia sanguinea Hoyle, sp. nov. A large or small tree, wholly glabrous, with very rough bark; branchlets terete, striate, at first inconspicuously lenticellate. *Stipules* small, very early caducous. *Leaves* paripinnate, up to 25 cm. or more long: petiole up to 2.5 cm. long, like the rhachis terete; leaflets 4-5-jugate, coriaceous, more or less unequal-sided, the lowest ovate, the middle pairs oblong-elliptic, the distal pair obovate-elliptic, 4-12 cm. long, 2-5 cm. broad, apex more or less abruptly long-acuminate; acumen 1-1.5 cm. long, acute, mucronulate; base very broadly to narrowly cuneate or occasionally rounded, more or less oblique, the upper side larger; main lateral nerves arcuately ascending, 5-7 on each side, raised on both surfaces, with less conspicuous intermediate nerves and reticulation, upper surface shining with midrib strongly impressed, lower

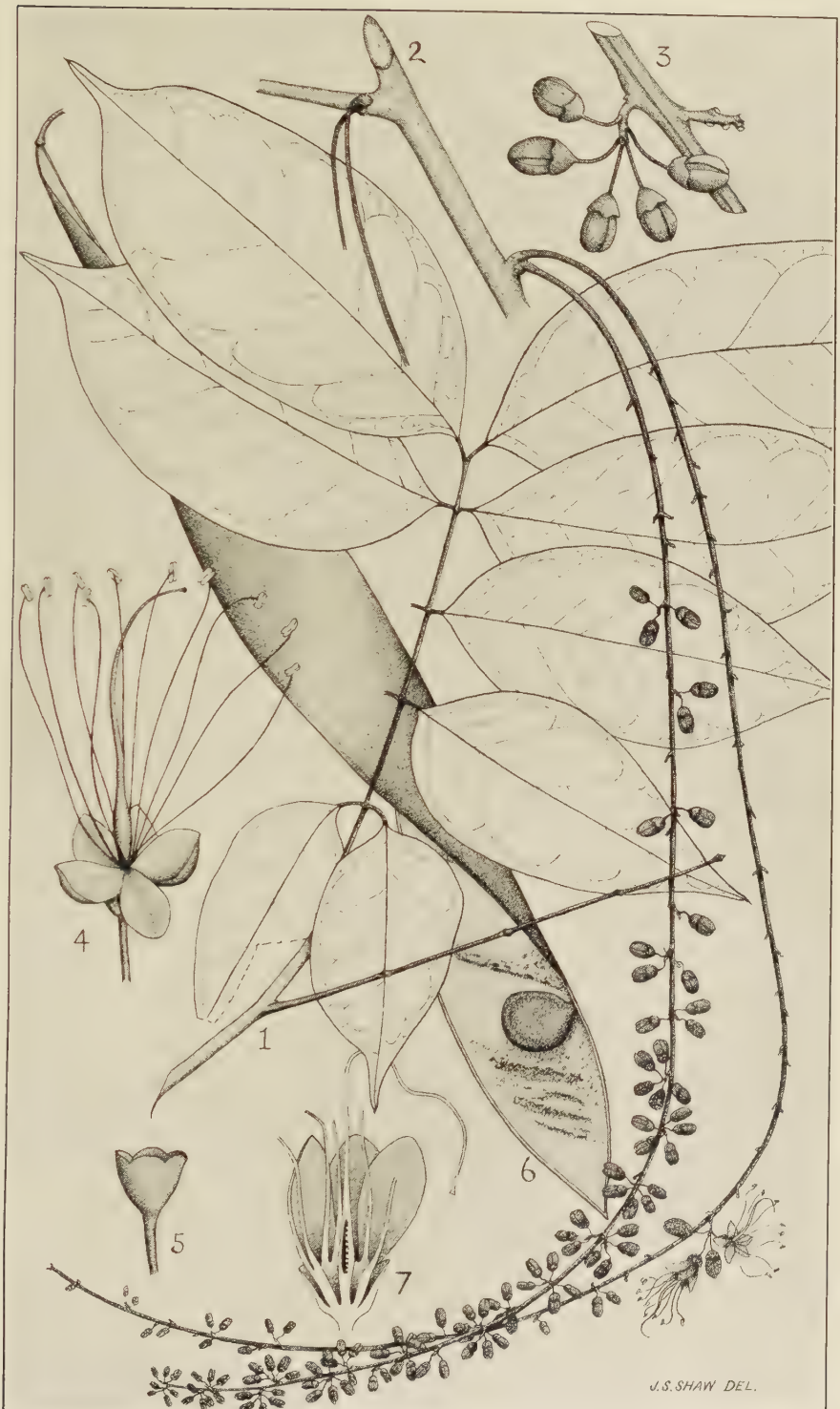
surface dull with midrib prominent, margin slightly revolute with marginal nerve. *Panicles* pendulous, solitary or 2 together on the old wood, or occasionally terminal on young branchlets, very slender, up to 25 cm. or more long, rhachis angular in the upper part, terete below, striate, 1-1.5 mm. in diameter, lateral branchlets of the panicle numerous (40 or more), exceedingly short, 2.5-4 mm. long, 5-7-flowered; bracts and bracteoles minute, very early caducous. *Flowers* wine-red throughout, small; pedicels slender, 3-3.5 mm. long; calyx campanulate, tube transversely rugulose, coriaceous, 2 mm. long, 3 mm. broad, with 5 very short, broadly rounded slightly ciliate teeth, open in aestivation; petals subequal, free, sessile, imbricate, the abaxial petal outside in bud, 6-7 mm. long, 4-5 mm. broad, ovate- to oblong-elliptic, obtuse, coriaceous, margin slightly scarious; disc thick, fleshy, adnate to the base of the calyx-tube and about the same length, free for about half its length, the petals arising below the margin, and the stamens from the margin; stamens 10, free, filaments filiform, from a broader base, about 25 mm. long; anthers dorsifixed, versatile, broadly oblong-ellipsoid, 1.5 mm. long; ovary stipitate, stipe 2.5 mm. long, arising from the receptacle within the cupular disc, ovary itself 4-5 mm. long, lanceolate, scarcely falcate, tapering into the filiform 20 mm. or more long style, which broadens into a small capitate stigma; style and stamens much crumpled in bud; ovules 10-12. *Legume* oblong-linear, acute at both ends, up to 45 cm. long and 5.5 cm. broad, valves coriaceous-woody and very elastic, dehiscing along both sutures and becoming spirally twisted, smooth shining dark brown outside with oblique splits in the surface; glabrescent inside with oblique fibrous transverse septa; sutures scarcely thickened, seeds (immature?) up to 9 or 10, suborbicular, 23 mm. long, 20 mm. broad, 4 mm. thick, shining red-brown and finely pitted especially towards the margin, abruptly contracted to the narrow eccentric 3-4 mm. long hilum; funicle very short and thick, 3 mm. long, 4.5 mm. broad.

WEST TROPICAL AFRICA. Gold Coast: Offin Headwaters, Ashanti, *Vigne* 1056 (type in Kew Herb.); Juaso, Ashanti, *Vigne* 1796; *Irvine* 385. Sierra Leone; Kennema, *Aylmer* 225 (S.L.F.H. No. 558); York Pass, *Lane Poole* 102, 198, 447.

A small spreading tree 6-10 m. high in closed forest, or a medium or tall tree up to 25 m., sometimes with bark "channelled, grooved, knotted and gnarled," and with wine red flowers in long pendulous racemose panicles, and large woody pods. Said to be common at York Pass, Sierra Leone, where it is a "big tree."

Vernacular names—*Samantawa*, *Breni-Atawa* (Ashanti).

The generic name *Chidlowia* is given in honour of the collector, Mr. Chidlow Vigne, Silviculturist, Gold Coast Forest Service; Mr. Vigne was the first to suggest that his specimens represented a new genus.



Chidlowia sanguinea Hoyle—drawn from type specimen. 1, branchlet bearing leaf, $\times 0.7$. 2, older branchlet with inflorescences, $\times 0.7$. 3, portion of inflorescence-axis, $\times 2$. 4, open flower, $\times 2$. 5, calyx, $\times 3.5$. 6, valve of pod from *Vigne* No. 1796, $\times 0.35$. 7, longitudinal section of flower, $\times 3.5$.

For the following description of the wood of this new genus I am indebted to Mr. H. E. Desch, Imperial Forestry Institute, Wood Structure Department.

DESCRIPTION OF WOOD.—Wood hard and moderately heavy, with interlocked fibre producing ribbon grain on radial surface; texture moderately coarse but even; dull grey-brown colour, rather streaky in appearance; vessel lines conspicuous as deep scratches on longitudinal surfaces. Pores of medium size, individually distinct to the naked eye. Soft tissue (parenchyma) abundant, (a) as borders to the vessels, distinct with lens on end surface and prominent on longitudinal surfaces, (b) as wavy tangential bands. Rays fine, visible with lens on end surface; tendency to storeyed arrangement.

MATERIAL.—Imperial Forestry Institute No. 5749. (Vigne's number 1056).

Note.—This description is based on one small hand specimen which appears to be from a young tree and may be entirely sapwood.

XII.—CONTRIBUTIONS TO THE FLORA OF BURMA: X.* C. E. C. FISCHER.

Acacia brunnescens C. E. Parkinson, sp. nov. [Mimosaceae]; *A. pseudo-Intsia* Miq. et *A. pennata* Willd. affinis, ab illa inflorescentia glabra, ab hac foliolis majoribus, ab utraque inflorescentiis inermibus recedit.

An extensive climber, the stems armed with prickles, the branchlets unarmed, smooth and dark brown. Leaves 11–21 cm. long, rhachis glabrous, furnished with a large oblong gland about 2.5 cm. above the base and with two glands at the top, one between each of the two terminal pairs of pinnae. Pinnae 8–12 pairs, 9–10 cm. long, minutely brown-hairy along the channel above. Leaflets 36–48 pairs along each pinna, glabrous, becoming brown in drying, oblong with a square base and rounded apex, the midrib nearer the upper edge of the leaflet, 8–10 mm. long, 1.7–2 mm. wide at the base and somewhat narrower at the top. Panicles terminal and from the axils of the uppermost leaves, glabrous and unarmed; peduncles 1 to 3 together, 1.5–2 cm. long, glabrous; flower heads claret-coloured in bud, yellow when open, 1.3 cm. in diameter. Calyx 2–2.5 mm. long, cleft half way down, the acute segments clothed with short hairs in the upper part. Corolla 2.5–3 cm. long, cleft about one-fourth down, the lobes hairy at the tip. Stamens 0.5 cm. long. Fruit not seen.

LOWER BURMA. Pegu Yoma, Insein District, Pyinmadaw, flowers Dec., C. E. Parkinson (type); Tavoy, Eindayaza to Mintha Sakan, flowers Nov., R. N. Parker 2191. Burmese name: Sooyit (Pegu Yoma).

The leaves turn a characteristic brown in drying.

*Continued from K.B. 1931, p. 29.

Eugenia spissa Craib [Myrtaceae].

Known from Siam.

S. Tenasserim, Htahpe Chaung, Ngawun Res, 300 ft., flowers Jan., *C. E. Parkinson* 1614. "A tree 30 ft. high; flowers white." Chan name: *Mai wa*.

Viburnum cordifolium Wall. [Caprifoliaceae].

Known from the Himalayas, from Kumaon to Bhutan.

Myitkyina District, Hpimaw Pass, 11,000 ft., young fruit July, *Sukoe* per *C. E. Parkinson* 10,078. "Shrub; stem soft, sub-herbaceous; fruit red."

Viburnum shweliense W. W. Smith [Caprifoliaceae].

Reported from W. China.

Myitkyina District, Hpimaw Pass, above 11,000 ft., flowers July, *Sukoe* per *C. E. Parkinson* 10,083. "Middle-sized tree; calyx red, corolla white."

Lonicera Braceana Hemsl. [Caprifoliaceae].

Found in the Khasia Hills.

Myitkyina District, Hkamkawn, 3100 ft., flowers July, *Sukoe* per *C. E. Parkinson* 10,026. "Woody climber; stems and twigs dark-grey; flowers white, yellowish-purple outside."

Lonicera Henryi Hemsl., forma [Caprifoliaceae].

Previously known from W. China.

Myitkyina District, Hpimaw Pass, 10,000 ft., flowers July, *Sukoe* per *C. E. Parkinson* 10,088. "Climber; flowers whitish."

Lonicera purpurascens Hook. f. et Thoms., forma [Caprifoliaceae].

Known from Kashmir to Sikkim in the Himalayas.

Myitkyina District, Hpimaw Pass, 11,000 ft., flowers July, *Sukoe* per *C. E. Parkinson* 10,072. "Shrub; flowers whitish or yellowish-white."

Agapetes Bulleyana Diels [Vacciniaceae].

Hitherto known only from N. W. Yunnan.

Myitkyina District, Kangfang-Chimali Pass, 6200 ft., young fruit May, *Sukoe* per *C. E. Parkinson* 9869. "Epiphytic shrub."

Vaccinium Delavayi Franch. [Vacciniaceae].

From Yunnan.

Myitkyina District, Chimali Pass, 10,000 ft., flowers May, *Sukoe* per *C. E. Parkinson* 9908. "Epiphytic shrub; flowers white, pinkish in bud."

Vaccinium scopulorum W. W. Smith [Vacciniaceae].

Known from Yunnan.

Myitkyina District, Langyang, 3500 ft., young fruit April, *Sukoe* per *C. E. Parkinson* 9183. "Epiphytic shrub; roots bulbous."

Palaquium obovatum (Clarke) King et Gamble [Sapotaceae].

Known from the Malay Peninsula. It is included in Roger's edition of Lace's list without reference to any collected specimen, but probably on the authority quoted below.

S. Tenasserim, *Divisional Forest Officer*, Coll. List 447, *Imperial Forest School Dehra Dun* 4369. Burmese name: *Pinlebyin aywetgyi*.

Diospyros Wallichii King et Gamble [Ebenaceae].

Reported in Siam and the Malay Peninsula.

Mergui, Tenasserim, Sindin, flowers March, *Maung Po Khant* per C. E. Parkinson 11,331. Vernacular name: *Tok-pin*.

Styrax benzoides Craib [Styracaceae].

Known previously only from Siam.

Myitkyina District, Langyang—Htawpaw, 3200 ft., flowers April, *Sukoe* per C. E. Parkinson 9180. "Middle-sized tree; stem dark-grey; blaze red; flowers white, stamens yellow."

Strophanthus perakensis Scortechini [Apocynaceae].

Found in the Malay Peninsula.

Victoria Point, Tha-tay-kyun, Tenasserim river banks, flowers March, *Maung Po Khant* per C. E. Parkinson 11,377.

Pseuderanthemum angustifolium Ridl. [Acanthaceae].

Known from Siam.

Mergui, Maliwun, flowers Feb., R. N. Parker 3179. "Shrub 30–60 cm. high, on rocks in stream-bed; flowers bright mauve."

Alseodaphne merguensis C. E. Parkinson, sp. nov. [Lauraceae]; ab *A. grandis* Nees foliis minoribus subtus brunneis haud glaucis, inflorescentia pubescente haud glabra distinguenda.

A tall tree, branchlets with thin, brown, smooth bark; young parts clothed with reddish-brown pubescence. Leaves 15–20 cm. long, 6–8 cm. wide, obovate, narrowed down to the 1.2 cm. long petiole, apex rounded or shortly acuminate, soon glabrous and turning dark brown, lateral nerves 8–10 pairs, ascending and looping with distinct transverse nerves and venation. Flowers yellowish, umbellate on the short branches of a slender axillary panicle hardly as long as the leaves; peduncles 7–10 cm. long; flower-buds clavate, yellow-brown pubescent, pedicels 3 mm. long. Perianth segments 6, the three outer smaller. Stamens 9, anthers 4-celled, the outer 6 with introrse anthers, 3 inner with extrorse anthers. Fruit ellipsoid-oblong, 4 cm. long, 1.8 cm. in diameter, black when ripe, the peduncle not swollen.

LOWER BURMA. South Tenasserim, Mergui District, Victoria Point, *Maung Po Khant* per C. E. Parkinson 11,341 (type); Palauk, *Sukoe* per C. E. Parkinson 11,035; Maliwun, *Sukoe* per C. E. Parkinson 10984; Amherst District, Thaungyin Valley, Mepale, *Maung Tha Myaing* 35 and 149. Burmese name: *Kaswe*. The fruit was described from No. 11,035.

Glochidion nanogynum Hook. f. [Euphorbiaceae].

Reported from the Malay Peninsula.

Mergui, Maliwun, fruit Jan., R. N. Parker 3159. "Small tree ; capsule 6-seeded ; seeds red."

Dendrocalamus Hamiltonii Nees et Arn. [Gramineae].

Known from N. E. India. It is included in Lace's List of trees and shrubs of Burma, but without definite locality.

Myitkyina District, Wasaung, April, Sukoe per C. E. Parkinson E 37. "Stems in densely packed clusters." Vernacular name : *Wabo*.

XIII.—MISCELLANEOUS NOTES.

PROFESSOR W. A. ROBYNS.—We learn with pleasure that Professor W. A. Robyns has been appointed Director of the Jardin Botanique de l'Etat, Brussels, in succession to Professor E. De Wildeman.

GEORGE FORREST.—We share the wide-spread regret caused by the sad news of the death, from heart failure, of Mr. George Forrest, which occurred on the 5th January at Tengyueh in Yunnan, western China. He was still a comparatively young man—he was born on the 13th March, 1873—and, judging from his wonderful achievements during the last thirty years, it is undoubted that he would have done much further valuable work had his life been prolonged, but he has lived long enough to establish a reputation which secures him a prominent place in the front rank of botanical collectors, and his name will be remembered for all time with gratitude and honour. It is no exaggeration to apply to him the phrase, slightly modified, used by Humboldt of Forrest's illustrious countryman, Robert Brown, *collectorum botanicorum facile princeps*.

Forrest was a native of Falkirk. In early manhood he spent some time in Australia and South Africa, and it was not till he was nearly thirty that he entered on the career in which he has so distinguished himself. On the recommendation of the late Sir Isaac Bayley Balfour he was engaged by Mr. A. K. Bulley, of Neston, Cheshire, to collect plants and seeds in China, and made his first expedition there in 1904-06. The expedition which has proved to be his last was his seventh.

Forrest was fortunate in getting into districts of Yunnan and eastern Tibet which were especially rich in interesting plants and which were practically unexplored botanically. His collections comprise about 30,000 numbers, and are remarkable for the excellence of the specimens and the admirable labels furnished with them. It is a pleasure to see and deal with such material. Several new genera, very numerous new species, and a host of interesting and beautiful garden plants have become known to us through Forrest's labours. His collections which were received at the Royal Botanic

Garden, Edinburgh, have been the subject of numerous contributions to the volumes of the *Notes* published by that establishment. An almost complete set has been presented by Edinburgh to Kew.

Among the honours awarded to Forrest were the Victoria Medal of Honour and the dedication of volume cxlviii of *Curtis's Botanical Magazine*, by the Royal Horticultural Society. A portrait of him, with biographical note, appears in the recently published volume, "*Curtis's Botanical Magazine Dedications, 1827-1927*," by E. Nelmes and W. Cuthbertson, and the same portrait is published in the *Gardener's Chronicle* of January 23, 1932. Forrest was elected a Fellow of the Linnean Society in 1924.

The Hon. VICARY GIBBS.—By the death of Mr. Vicary Gibbs on January 13th, Kew has lost an old and valued correspondent. For nearly thirty years a constant interchange of plants, chiefly hardy trees and shrubs, has been carried on between this establishment and Aldenham. Besides being a cultivator in the first rank, Mr. Gibbs was an ardent collector. For many years past he has paid an annual visit to Kew, the last in November, 1931, to inspect the nurseries and arrange exchanges, and it was interesting to see how keen he was to obtain additional species for his collection irrespective of any ornamental qualities they might possess. The result is that Aldenham possesses a collection of trees and shrubs probably second only in this country to that of Kew in extent. In the Ericaceae Aldenham is weak, but only because of the unfavourable nature of the soil; the harshness of the climate also makes impossible the cultivation of many plants that give so much beauty and interest to the gardens of Sussex and Hampshire, not to mention those farther west. Mr. Gibbs took a rather grim pride in the fact that Aldenham had achieved a frost during every month of the year.

Equalling his acquisitiveness as a collector was his love of order and cleanliness. Aldenham has many rare plants but after a tour of the garden one always felt that a weed was probably the rarest. His love of pruning his trees, generally in a pyramidal shape, was one of his best known characteristics. It became in the end something of a joke amongst his numerous friends. But although he may have carried the process too far for the taste of most people, there is no doubt that he has laid the foundation of many fine trees if they are allowed to stand.

This is not the place to dwell on his triumphs in the horticultural show tents, but we believe that the gold medals he has been awarded number one hundred, not to mention silver cups and other trophies. His exhibits of vegetables have never been surpassed. Although his chief interest no doubt was in trees and shrubs, his greenhouses sheltered fine collections of *Streptocarpus*, *Cape Pelargonium* and other things. Whatever has been grown at Aldenham has been grown well. The gardening world has lost a great and in many respects unique personality.

The International Association of Wood Anatomists.—We note with interest that, as the outcome of unofficial meetings at the Cambridge University Forestry School, during the 5th International Botanical Congress, to discuss the formation of an International Association of Wood Anatomists, a committee was appointed to draw up a constitution for an 'Association' and report to the "Congrès International du Bois et de la Sylviculture" held at Paris in 1931.

A constitution was duly adopted at this Congress with the following objects: (a) to interchange ideas and information through correspondence and meetings, (b) to facilitate the collection and exchange of material, (c) to work towards standard terminology and descriptions, (d) to stimulate the publication of scientific articles and abstracts, and (e) to encourage and assist the study and teaching of wood anatomy. Further particulars of the organisation are given in "Tropical Woods" No. 27, pp. 20-23.

Septoria Cotyledonis.—Elsenburg, the locality for this fungus in South Africa given in *K.B.* 1931, 203, was stated to be in Natal instead of in Cape Province, owing to a misreading of the list accompanying the collection.

Botanical Magazine.—The second part of Vol. clv. of the Botanical Magazine was published on February 1st and contains the following plant portraits:—

Cynoches Egertonianum Bateman (t. 9260), from Central America, the plant figured is a male specimen and *C. Rossianum* Rolfe is considered to be the female form and is therefore made conspecific with *C. Egertonianum*; *Watsonia Wordsworthiana* Matthews & L. Bolus (t. 9261), a beautiful pink-flowered species from the Tulbagh Division, Cape Province, S. Africa; *Schizophragma viburnoides* Stapf (t. 9262), from southern and south-eastern China and Formosa—this is a new combination, the plant having been originally placed in the genus *Pileostegia* by Hooker & Thomson; *Rhododendron sanguineum* Franch. (t. 9263), a low shrub found in north-western Yunnan between 3300 and 4200 m.; *Ceanothus Fendleri* A. Gray (t. 9264), a low shrub of the eastern Rocky Mountains from Arizona to South Dakota; *Selago serrata* Bergius (t. 9265), an interesting member of the genus from the south-western corner of the Cape Province, South Africa, which was originally introduced by Masson in 1774; *Primula Dubernardiana* Forrest (t. 9266), discovered by Forrest in 1904 on the eastern flank of the Mekong-Salween divide, south-western China; *Raffenaldia primuloides* Godron (t. 9267), an interesting Crucifer from North Africa; *Erodium Mouretii* Pitard (t. 9268), a native of western Morocco; *Fremontia mexicana* Macbride (t. 9269), found in Mexico and Lower

California, and *Phlomis italica* Linn. (t. 9270), which is a native of the Balearic Isles and is not found in Italy.

Mesembryanthema.*—This is a most unusual form of book dealing only with the stemless or almost stemless plants which until a few years ago were all included in the genus *Mesembryanthemum*. The information relating to these interesting South African succulents is printed in English, German and Dutch, which makes the volume somewhat bulky. The book is mainly the work of Mr. N. E. Brown, whose first acquaintance with the group began as long ago as 1865, when he saw a collection of over 300 species at Reigate, some of the plants or descendants of them having formed part of the celebrated Haworth's own collection.

Since 1925, when Mr. Brown first published in the *Gardeners' Chronicle* his key to the segregated genera, a great amount of work has been done, not only by himself, but by botanists in South Africa and in Europe, where the fancy for these weird and interesting plants has developed much more rapidly than in England. Naturally there has arisen considerable difference of opinion as to the amount of generic "splitting" desirable and in regard to the interpretation of the older species with new or living material, many of them being represented by ill-preserved herbarium specimens or known only from figures. This is particularly noticeable in the case of some species; for example the *Mesembryanthemum edentulum* of Haworth has been described in the course of the last few years as *M. apiculatum* Kensit, *M. binum* N. E. Br., *Echinus apiculatus* L. Bolus, *Braunsia bina* Schwantes, and now in this book it is *Braunsia edentula* N. E. Br. Again, the *M. canum* of Haworth has been called *M. Tugwelliae* L. Bolus, *Juttadinteria Tugwelliae* Schwantes, *Hereroa Tugwelliae* L. Bolus, *Bolusanthemum Tugwelliae* Schwantes, and now Mr. Brown says it has to be *Bijlia cana* N. E. Br. The lay botanist will be apt to enquire whether about 25 to 30 genera instead of about 100 would not have been sufficient to accommodate the species which, until a few years ago, were all included in one genus.

The book is profusely illustrated by photographs, a few of the species in their natural habitat in South Africa being shown by photographs taken by Dr. I. B. Pole Evans. The remainder are mainly photographs of cultivated plants in this country or on the Continent and do not therefore necessarily show the plants as they are found in the arid South African Karoo and in Namaqualand; there are also two coloured plates by Mr. N. E. Brown. One of the most minute species is *Conophytum Comptonii*, shown on page 145, fig. 44, D; this plant in its natural habitat on the top of the escarpment near the Van Rhyns Pass, Calvinia Division, almost defies

**Mesembryanthema*, by N. E. Brown, A.L.S., Dr. A. Tischer and M. C. Karsten, edited by E. J. Labarre, pp. 323. L. Reeve & Co., Ltd., Bank Street, Ashford, Kent, England (1931). Price 36s. (in Germany R.M. 37; in Holland 22 gulden).

detection. A mistake has been made in stating that this species comes from the Malmesbury Division.

Three authors have been responsible for the book. Mr. Brown has supplied practically all the descriptions, Dr. Tischer has translated these into German and contributed a chapter on cultivation and diseases, while Miss Karsten translated the English and German text into Dutch and the Dutch and German into English and has also compiled a chapter on "General Ecology," mainly from the writings of Dr. Marloth and others with actual experience of the group in the veld.

The book is primarily intended for the cultivator or "fancier" of these wonderful South African succulents. The genera are not defined and there are no keys, but the excellent photographs will very often be sufficient to determine many of the species in cultivation without much reference to the descriptions, some of which are relatively very short.

J. H.

British Marine Algae.*—A copy of the new "Handbook of British Seaweeds" prepared by Dr. L. Newton, Professor of Botany at University College, Aberystwyth, has been received from the Trustees of the British Museum. The appearance of this work has been awaited with interest as it is 81 years since the great classic, Harvey's "Phycologia Britannica," still the stand-by of many British algologists, was published.

The volume opens with an introductory chapter containing an account of the main groups of marine algae with paragraphs on their distribution, their ecology and economic uses, and also on their collection and preservation. In the body of the work the main groups are dealt with in the following sequence:—Myxophyceae, Chlorophyceae, Phaeophyceae, Rhodophyceae, and the arrangements of the orders and families is, as a whole, that of the "Catalogue" published by Batters in 1902. Keys to genera, some of which appear to be original, are provided at the commencement of the groups, and useful keys are also given to the species. The descriptions of both genera and species are short, but they are accompanied by copious and most serviceable illustrations. Some of the latter are by the author, but most are the work of the late Mr. Percy Highley, the well-known artist at the British Museum.

The author had an onerous task which has been carried out under circumstances of difficulty and the publication of the volume forms a landmark in the history of British Algology. For the greater number of species the author is on safe ground and her work has been well done. There remain many doubtful species and several notoriously difficult genera which have long been an obstacle in the way of the publication of a Flora. No doubt Prof. Newton is fully

*Handbook of the British Seaweeds, by Lily Newton, Ph.D., F.L.S. The Trustees of the British Museum, London, 1931. Pp. xiii. 478 and 270 figures. Price 15s.

conscious that in these cases much revision will be necessary as the result of further research. This is not the place to enter into detailed scrutiny. One serious defect, which it appears was due to a misunderstanding, must, however, be noted, namely that though the work is intended to be a complete Flora, only a very small proportion of the species added to the British list since 1902 has been incorporated. This neglect of recent work involves the omission of eight genera, including the well-known *Colpomenia* and over 30 species.

Biographical Index of British and Irish Botanists.*—

Britten and Boulger's Index has long been recognised as an exceedingly useful work of reference for biographical details of deceased botanists of British and Irish nationality. It originally appeared by instalments in the *Journal of Botany* for the years 1888-1891, and so much supplementary information was subsequently received that the Index, continued to the end of the year 1892, was published as a separate work of 188 pages in 1893. Three Supplements, issued in 1899, 1905, and 1908 respectively, carried the work to the end of 1907, and this second, much enlarged edition, revised by Dr. A. B. Rendle, carries it to the beginning of 1928.

The information supplied includes the dates of birth and death of the botanist concerned, and an indication of his occupation, degrees, and titles, offices held, and published botanical work. The present whereabouts of any correspondence or manuscripts and the existence of any herbarium or of plants collected are also given, and the chief sources of further information are cited.

In a work of this comprehensive nature there are bound to be numerous omissions and inaccuracies, and Dr. Rendle asks that he may be notified of any that are detected. Since it is stated in the Preface that, in including names, "generosity has been shown to those who have contributed to local botany," certain additional names may be suggested such as Henry Clarke, 1858-1920, who published many new county records for Cardigan (*Rep. Bot. Soc. & Exch. Club Brit. Isles*, 1920, 101 : 1921), and A. S. Montgomery, 1844-1922, whose herbarium is preserved in the Museum Free Library, Cheltenham (*l.c.* 1922, 707 : 1923). Botanists should be grateful to Dr. Rendle, and to Mr. John Ardagh, whose assistance is specially acknowledged in the preface, for bringing this very useful work up to date.

Royal Horticultural Society Honours to Kewites.—Under this heading in *K.B.* 1932, 43, five lines from the bottom of the page, "Messrs. Sutton & Sons, St. Albans" should read "Messrs. Sanders, St. Albans."

*A Biographical Index of deceased British and Irish Botanists, compiled by James Britten and George S. Boulger. Second edition, revised and completed by A. B. Rendle. London: Taylor and Francis, 1931, 8vo., pp. xxii + 342. Price 15s. net.

The late Mr. Ledger's collection of succulent plants.—Mr. Walter E. Ledger, who died on December 11th, 1931, was a constant correspondent of Kew and frequently visited the Gardens, where he was a very familiar figure, as he almost always was dressed as a sailor. His particular interest was the genus *Ceropegia*, but he was also a keen cultivator of Orchids, Haemanthus, Crinum, and other plants both tender and hardy, and had got together an unique collection of *Ceropegias* at his home at Wilton Grove, Wimbledon. His executors have very kindly presented the whole of his living collection of tender plants to Kew, as well as his dried collection of *Ceropegias* with his notes and drawings. The living plants, some 300 in number, the majority being *Ceropegias* and bulbous plants, have now been received and form a very valuable addition to the Kew collections.

Mr. Ledger's interest in plants dates back some forty years and it was rather from their peculiarities or scientific interest than from their beauty that he was drawn to collect and study certain groups.

Mr. C. H. Wright, who knew Mr. Ledger intimately, has kindly sent the following note about his botanical activities: "Although interested in cultivated plants generally Mr. Ledger devoted himself specially to *Asclepiadaceae* and *Amaryllidaceae*, many species of which he grew at his home at Wimbledon. His favourite genus was *Ceropegia*, of which, with the assistance of various correspondents in South Africa, he got together a fine collection of species. As soon as a plant new to him flowered he brought a specimen to Kew not only to have it named or the name confirmed, but also to learn as much as possible about it, for he was not content with superficial knowledge. It is much to be regretted that, with his great knowledge and keen observation of the plants he was specially interested in, he published so little.

"Mr. Ledger was extremely fond of the sea and used to spend his summers in cruising around the British Isles in his yacht 'The Shrimp' and in visiting cottage gardens where (as he told the writer) he often found uncommon plants growing which had been brought to England by sailors. In his early years Mr. Ledger travelled in South America."

MR. T. W. TAYLOR.—We record with very deep regret, as this goes to press, the death, on March 4th, of the Curator, Mr. T. W. Taylor.
